



Alaska Restaurant & Retailers Association

United States House of Representatives
Committee on Energy and Commerce
Chairman Fred Upton
2125 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Upton and the Committee on Energy and Commerce,

As a stakeholder in the restaurant industry, I would like to issue a comment in reaction to your fourth white paper on energy policy. As President of the Alaska Restaurant and Retailers Association, I have seen how the Renewable Fuel Standard and its over-reliance on corn ethanol has raised the price of corn-based food items and products as well as materials such as napkins, utensils, kitchen equipment, etc. that are affected by rising transportation costs. High food, feed and fuel prices have a domino effect that hit all of us eventually, and we here in Alaska are hit particularly hard.

I believe that the original intention of the Renewable Fuel Standard, to enhance energy security through reduced dependence on foreign oil, remains extremely relevant and essential today. But since the RFS was implemented, we have seen the devastating effect of diverting corn to ethanol during drought years, as well as the cost of transporting corn ethanol out of the corn states, has had on the restaurant industry as well as dairies, poultry growers and livestock farmers.

But there are solutions. New technologies that have arisen since the RFS was implemented demand a serious reconsideration of the standard. No longer is corn the only responsible alternative to foreign based fuels. Conventional ethanol made from natural gas, for instance, is a viable, low cost technology that exists right now and would significantly relieve the burden on corn.

As you review and address several energy policy considerations related to the RFS, I hope you will think of the restaurant industry and our dependence on affordable food, feed and fuel. While we support the effort to reduce our dependence on petroleum imports, we believe it is equally important to be smart, open and innovative in our approach to alternative domestic fuels.

Sincerely,

A handwritten signature in black ink, appearing to read "Jim Gilles", with a long horizontal flourish extending to the right.

Executive Director

Alaska Restaurant & Retailers Association

2601 Blueberry Road

Anchorage, Ak 99503

June 21, 2013

Chairman Fred Upton & Ranking Member Henry Waxman
United States House of Representatives
Committee on Energy & Commerce
2125 Rayburn House Office Building
Washington, D.C. 20515

Re: Comments of the American Chemistry Council on Renewable Fuel Standard
Assessment White Paper on Energy Policy

Dear Chairman Upton and Ranking Member Waxman:

The Plastics Division of the American Chemistry Council (ACC) is pleased to submit comments on the House Energy & Commerce Committee's Renewable Fuel Standard (RFS) Assessment White Paper on Energy Policy. Our comments focus on the exciting potential offered by two emerging conversion technologies, pyrolysis and gasification, which are enabling companies to produce crude oil, chemical feedstocks, and fuels such as diesel or ethanol from our non-recycled waste stream.

ACC would like to inform the committee regarding the state of commercialization for these technologies as well as the considerable benefits that would come from full deployment.

ACC represents the leading companies engaged in the business of chemistry. Its Plastics Division, which represents leading manufacturers of plastic resins, is an industry leader in promoting innovative plastics recycling and energy recovery programs, and a proud sponsor of educational and outreach programs to improve plastics recycling and recovery nationwide.

Energy policy is a critical issue for the business of American chemistry. ACC supports a market-based "all of the above" national energy policy anchored in maximizing access to competitively priced domestic energy supplies, using energy efficiently, and developing a diverse set of energy sources. Energy policy must embrace the development of all viable energy sources, including coal and nuclear (in addition to oil, gas and renewables). A comprehensive energy policy also must promote energy efficiency and alternative and renewable sources such as energy recovery. The attached comments focus on technologies to enhance energy recovery.

Please feel free to contact me or Craig Cookson, director of sustainability, with any questions. Craig can be reached at (202) 249-6622 or at craig_cookson@americanchemistry.com.

Very truly yours,



Steven Russell
Vice President, Plastics Division
American Chemistry Council

Attachments:

Comments of the American Chemistry Council on the House Energy & Commerce Committee's 4th White Paper on the Renewable Fuel Standard Assessment (see below)

Conversion Technology: A complement to plastic recycling, 4R Sustainability Inc. (April 2011).
<http://plastics.americanchemistry.com/Plastics-to-Oil>

Environmental and Economic Analysis of Emerging Plastics Conversion Technologies, RTI International (January 2012). <http://plastics.americanchemistry.com/Sustainability-Recycling/Energy-Recovery/Environmental-and-Economic-Analysis-of-Emerging-Plastics-Conversion-Technologies.pdf>

Comments of the American Chemistry Council
on the House Energy & Commerce Committee's

4th White Paper on the Renewable Fuel Standard Assessment

June 21, 2013

The Plastics Division of the American Chemistry Council (ACC) is pleased to comment on the House Energy & Commerce Committee's 4th White Paper on the Renewable Fuel Standard Assessment (White Paper). ACC represents the leading manufacturers of chemicals and plastics in the United States. ACC's Plastics Division is an industry leader in promoting innovative plastics recycling and energy recovery programs, and a proud sponsor of educational and outreach programs to improve plastics recycling and recovery nationwide. Our comments are focused on one aspect of the White Paper: emerging conversion technologies that can produce fuels, chemicals, and petroleum feedstocks from non-recycled plastic waste.

Highlights of Energy Recovery from Used Plastics:

- Plastics contain more energy than the average grades of coal burned in this country
- If non-recycled plastics in municipal solid waste were converted to fuel, they could power 6 million cars annually
- All of the waste we landfill every year contains enough energy to power 16 million homes annually

Source: Columbia University Earth Engineering Center, Energy and Economic Value of Non-Recycled Plastics (NRP) and Municipal Solid Wastes (MSW) that are Currently Landfilled in the Fifty States.

Where Energy Recovery “Fits” into Solid Waste Policy

ACC agrees with the U.S. Environmental Protection Agency's (EPA) Solid Waste Management hierarchy to Reduce, Reuse, Recycle, and Recover. Preference is sequential, with source reduction and reuse occurring before recycling, followed by recovery. Plastics manufacturers have themselves led the way in recent years with respect to “Reduce,” best illustrated by the iconic plastic water bottle, which consumers know has gotten noticeably thinner in the last few years thanks to design and manufacturing innovations. ACC expends significant resources promoting plastics recycling, and thanks in part to more understandable labeling, education, outreach, and targeted programming, plastics recycling rates have continued to show growth. Today, 94 percent of U.S. consumers can recycle all types of plastic bottles and caps locally and 60 percent of Americans also can recycle other types of plastic containers from products such as yogurt, sour cream and butter. And the recycling of plastic bags and wraps – also known as film – has grown dramatically in recent years.

In the municipal solid waste stream and other waste streams, there remain non-recycled materials that are either contaminated or engineered in such a complex way that they cannot be recycled economically. Some of these non-recycled plastics and other wastes are converted into electricity and steam via the 86 waste-to-energy plants operating in the U.S. These plants accept municipal solid waste for processing using thermal conversion technologies.

In 2011, the Architect of the Capitol decided to send the non-recycled waste produced in the U.S. Capitol complex to an energy recovery facility. ACC applauded that decision, including through an op-ed that appeared in *Roll Call*.¹ Unfortunately, the United States is behind in its use of energy recovery technologies compared to many advanced countries in Europe (such as Germany, Denmark, Sweden, and Switzerland) and Japan. A large portion of America's non-recycled waste stream continues to be landfilled – a missed opportunity to recover the valuable energy content.

New and existing energy recovery technologies offer enormous potential to convert more U.S. waste streams to energy and other valuable commodities. In a report prepared for ACC, engineers at Columbia University estimated that if all U.S. municipal solid waste was captured and converted to energy each year, the energy produced would power some 16 million households.² As technologies advance, companies – ranging from Fortune 100 waste management companies to privately-owned, medium-sized companies to small entrepreneurs – are working to commercialize technologies that could convert our waste into valuable products such as liquid fuels and renewable chemicals.

Why Energy Recovery of Plastics is Possible

Energy recovery recaptures the embodied energy in a particular material. The composition of a material says much about whether energy can be recovered. In general, materials containing carbon (chemists classify carbon-based compounds as “organic” as opposed to inorganics, like metals) are good candidates for energy recovery. Not surprisingly, because many plastics are made by polymerizing simple hydrocarbon molecules, they can be “unmade” into simpler constituents through energy recovery. Many plastics contain as much “embodied energy” as other high-Btu fuels, like coal, and more energy than traditional fuel sources like wood. In the Columbia University report, it was estimated that mixed plastics in the waste stream average 14,000 BTUs/lb.³ This energy content is higher than most coals currently burned in the United States, as well as that of petroleum coke.

Two of the more advanced technologies for recovering energy from mixed plastic waste are called pyrolysis (or de-polymerization) and gasification. In the pyrolysis process, plastics are

¹ See, Cal Dooley, Capitol's Waste-to-Energy Program is a Good Model, *Roll Call* (November 28, 2011). http://www.rollcall.com/issues/57_64/cal_dooley_capitol_waste_energy_program_good_model-210532-1.html

² Columbia University Earth Engineering Center, Energy and Economic Value of Non-Recycled Plastics (NRP) and Municipal Solid Wastes (MSW) That are Currently Landfilled in the Fifty States, <http://plastics.americanchemistry.com/Education-Resources/Publications/Report-from-Columbia-Universitys-Earth-Engineering-Center.pdf>

³ Columbia University Earth Engineering Center, Energy and Economic Value of Non-Recycled Plastics (NRP) and Municipal Solid Wastes (MSW) That are Currently Landfilled in the Fifty States, <http://plastics.americanchemistry.com/Education-Resources/Publications/Report-from-Columbia-Universitys-Earth-Engineering-Center.pdf>

heated in the absence of oxygen until they eventually melt and then gasify. Most of the gases are then cooled, condensed and converted into synthetic crude oil or further refined into synthetic fuels such as diesel or naphtha. In the gasification process, non-recycled wastes are heated and converted to synthesis gas (syngas) in an oxygen deficient atmosphere. The syngas has significant versatility as it can be converted into chemicals or fuels such as methanol and ethanol.

Authors of the Columbia University report conservatively estimate that diverting just the non-recycled plastics from landfills and converting them into oil would generate some 87 million barrels of oil per year.⁴ Based on current average fuel economy and the average miles driven by Americans per year, that is enough oil to fuel 6 million cars for an entire year.⁵

ACC believes energy recovery's potential is actually much greater. The Columbia University report focuses only on plastics in municipal solid waste and does not address plastics from other waste streams, such as post-industrial wastes, medical waste or automobile shredder residue (ASR). Converting non-recycled plastics and other wastes into fuels also has considerable environmental benefits over landfilling. In the attached report "Environmental and Economic Analysis of Emerging Plastics Conversion Technologies" prepared for ACC by Research Triangle Institute International, it was found that gasification and pyrolysis technologies saved energy and reduced greenhouse gases over their life cycle when compared to landfilling.⁶

Additionally, to inform policymakers, waste management professionals, recyclers, local governments, and investors of the potential of these exciting technologies, ACC released the attached report "Conversion Technology: A Complement to Plastics Recycling" in 2011. The report detailed the potential two-fold benefits of plastics to oil technology.⁷

The primary benefit of plastics-to-oil technology is its potential to convert non-recycled plastics into valuable petroleum feedstocks and fuels. The secondary benefit, of course, is the avoidance of losing a potential domestic resource to landfill. The report also published surveys completed by 17 separate companies – both U.S.-based and overseas – looking to commercialize plastics-to-oil technologies in the United States. To date, several companies have matured beyond the pilot-scale facilities mentioned in this report and now have full scale commercial systems as well as partnerships and investments with larger waste management and recycling companies.

The American Chemistry Council appreciates the opportunity to comment on the Committee's White Paper. Our comments are intended to highlight specific technologies that have a very promising future. We hope the Committee will explore the potential of plastics to oil

⁴ Columbia University Earth Engineering Center, Energy and Economic Value of Non-Recycled Plastics (NRP) and Municipal Solid Wastes (MSW) that are Currently Landfilled in the Fifty States, <http://plastics.americanchemistry.com/Education-Resources/Publications/Report-from-Columbia-Universitys-Earth-Engineering-Center.pdf>

⁵ Columbia University Earth Engineering Center, Energy and Economic Value of Non-Recycled Plastics (NRP) and Municipal Solid Wastes (MSW) That are Currently Landfilled in the Fifty States, <http://plastics.americanchemistry.com/Education-Resources/Publications/Report-from-Columbia-Universitys-Earth-Engineering-Center.pdf>

⁶ RTI International, Environmental and Economic Analysis of Emerging Plastics Conversion Technologies Final Project Report, <http://plastics.americanchemistry.com/Sustainability-Recycling/Energy-Recovery/Environmental-and-Economic-Analysis-of-Emerging-Plastics-Conversion-Technologies.pdf>

⁷ 4R Sustainability, Inc., Conversion Technology: A complement to plastic recycling, (2011 April). <http://plastics.americanchemistry.com/Plastics-to-Oil>

technologies. ACC looks forward to sharing additional research with the Committee in the near future and would be happy to discuss with Committee staff.

Comments of the Advanced Biofuels Association

RENEWABLE FUEL STANDARD ASSESSMENT WHITE PAPER

Energy Policy

Committee on Energy and Commerce
United States House of Representatives
June 21, 2013

Overview:

On behalf of the Advanced Biofuels Association (ABFA), we welcome the opportunity to comment on the current white paper discussing the Renewable Fuels Standard's role in overall US energy policy. ABFA represents over 40 member companies who produce advanced biofuels and biofuels feedstocks. As an Association we have appreciated the Committee's support and attention to the Renewable Fuels Standard program. For more information about ABFA and a map of our member's locations, see Appendix A.

The Advanced Biofuels Association has adopted a technology neutral approach since our inception. Even before the establishment of the RFS2 we testified before the Energy and Commerce Committee and urged that Congress should not attempt to pick winners and losers, but rather to set policies that will create performance objectives to create a positive marketplace from which the business community will have the confidence to take the risk necessary to build new commercial facilities in the advanced and cellulosic biofuels industry.

Since the Arab oil embargo of 1973 the United States government has actively sought to enhance our energy security. Both national parties have consistently been supportive of an "all of the above" energy strategy. This is an approach our association members support broadly. Our policies should recognize that we must have a wider array of options in our transportation sector and must use fuels more strategically and efficiently moving forward as a nation. The RFS and CAFE are two of the programs on the books which seek to achieve that balance.

In just four short years following the enactment of the RFS, the advanced and cellulosic biofuels industry has made significant strides in achieving many of the objectives Congress laid down. We have several production facilities built and in operation currently, with many more on the way prior to 2016. Changing the rules in the middle of the game because of the recent reserve windfall in the oil and gas sector would jeopardize this success and the security of the country, a policy of putting "too many eggs in one basket." We fundamentally believe that given the projected growth of world population and growth of energy demand per capita between now and 2050 that we must continue to pursue a diversified strategy on all fronts. There are no silver bullets for energy supply and history has demonstrated time and again that international events can and do have significant impacts on the US, challenge the world at large to redistribute energy, and cause severe price volatility. We have simply made so much progress in the pursuit

of cellulosic and advanced biofuels we believe it would be foolish to walk away from the opportunity at this time.

Question 1: How vulnerable is the United States currently to major oil supply and price disruptions? In the context of rising domestic oil production and falling demand, how important is it to adopt new and strengthen existing policy measures to further reduce our dependence on oil?

Answer: The market for oil is part of a global energy market. In this market the rules of engagement vary significantly from country to country and region to region. Major economies have rejected a free market pricing approach to the use of transportation fuels (ex: Brazil). These countries arbitrarily hold down the price of transportation fuels as a means of social policy to improve the standard of living and attempt to drive economic output. A great number of countries have nationalized their energy companies, hold significant power in their operations (ex: Russia), or established and are part of the oil cartel OPEC (ex: Iran, Venezuela). As long as these differences exist and as long as the major producing nations have religious, economic, or strategic differences, the US will be forced to manage the possibility of oil supply and price disruptions. As we have come to appreciate since the 1970's many of these countries are not allies or friends of the United States. The members of the ABFA do not believe that, just because the United States is increasing domestic production, these challenges will cease to exist. In a global pricing system, even with greater control over our own production output, world market volatility will ultimately be reflected in the price we pay for gasoline and diesel. Further, even if the United States were to achieve domestic energy independence, many of our key trading partners will not be similarly situated and disruptions in international crude oil supplies will continue to cause substantial impacts on our economy.

These concerns are central to the Department of Defense and national security efforts to drive a policy of diversity across our armed forces' energy footprint. The Department of Defense is exploring the use of renewable electricity, achieving more efficiency in naval vessels and ground vehicles, and is most effectively using the Defense Production Act to diversify and establish a drop-in advanced biofuels industry. ABFA believes this is a prudent and rational set of strategic options to protect the nation's energy security and national security. In all forward analysis of energy supply/demand, biofuels continue to play an important part in filling the supply demand gap. This fact can be seen in the most recent BP Statistical Review, IEA, and EIA analysis. The US remains vulnerable and strong biofuels policies can help.

ABFA believes the RFS is at the core of delivering the economic and national security goals that are fundamental to the United States. We also believe we can learn from those policies which have been so successful in developing the oil and gas industry. Federal support of the oil and gas industry over the last 97 years, in the tax code for example, helped spur economic development and overall prosperity. The Tax Act of 1916 allowed expensing rather than amortization of intangible drilling costs. In 1926 the Revenue Act established the percentage depletion deduction, allowing producers of oil and gas to deduct a fixed percentage of their costs rather than economic depletion. To the renewable electricity sector, tax credits have proven a powerful tool, when available. Yet due to the "on again off again" reality of these tax credits, they have also created market crashes that decimate companies and their talent pools. These are good examples of policies that have worked to drive deployment, job creation, and enhanced

competitiveness; however, they also demonstrate that inconsistent signals have a tremendously negative impact on the market.

The examples above also demonstrate that the sectors of the transportation fuels industry have not lined up at the starting gate at the same time. This is a significant factor hindering the ability of various sectors, such as advanced and cellulosic biofuels, to compete in the short term on a head-to-head basis.

Our dependence on oil remains extreme, and while the advanced and cellulosic biofuels industry is making progress it does not have the long history and multiple layers of federal support for the oil, gas, and even renewable electricity sector. Many of these policies do not directly translate to the biofuels industry. Oil and gas tax credits are different in structure, and the commodity fuels markets do not lend themselves to procurement policies such as a long term power purchase agreements that have had tremendous success for the solar and wind industries.

Thus, it is of great importance to adopt and strengthen policies in support of advanced and cellulosic biofuels that directly reduce oil dependence. Learning from their successes and failures, we urge Congress to provide an equivalent suite of support, with the RFS at its core, and to be consistent in its policies. Current "on again off again" signals make it far more difficult for our members to obtain the types of financial commitments necessary to stand up the next generations of advanced and cellulosic biofuels plants. Managing the risk of regulatory and legislative uncertainty has become one of the principle challenges of anyone in our sector. Consistent, tailored, and technology neutral federal support is essential.

Question 2: How has the RFS contributed to improved energy security? To what degree should the reduction in U.S. oil imports be attributed to the RFS?

Answer: Since the completion of the 2010 RFS rulemaking, the advanced and cellulosic sectors of the biofuels industry have invested heavily in R&D and built commercial facilities that augment the traditional oil and gas infrastructure. Last year the advanced sector of the renewable fuels industry was able to achieve the volumetric target established under the RFS of 2.25 billion gallons equivalent of advanced biofuels. A large portion of that production came from the production of biodiesel, renewable diesel, sugar cane ethanol, and other EPA approved fuels. As a result of this achievement, the EPA proposed and raised the 2013 RVO requirements for both the advanced biofuels pool as well as the biomass based diesel pool. This year we expect that the target (2.75 billion gallons) will once again be achieved. Although not as large as the well-established corn ethanol industry, which has built 14.9 billion gallons of production, this is a significant achievement in just the three short years since the rulemaking was completed. In addition many of the newer more innovative technologies are beginning to break ground and plan to have a wide range of gasoline, jet, diesel and advanced ethanol available to the market between now and 2016.

We believe this is exactly what the authors intended when they overwhelmingly passed the RFS in 2007. We believe this provides a further hedge against the global markets volatility and is part of the all of the above strategy which will continue to deliver benefits and options going forward. When viewed in its entirety, the renewable fuels industry is a major security, economic, supply,

and environmental hedge that has returned value to the taxpayers far beyond any current federal support.

Question 3: In the context of rising domestic oil production and falling demand, to what extent does the RFS currently contribute to U.S. energy security and to what extent will it further contribute going forward?

Answer: If one acknowledges that a growing global population will demand an increasingly energy rich life, then the recent achievements in the United States of expanded oil and gas production and decreased use of gasoline may only impact our long term exposure to volatility on the margin. As the Committee noted, EIA continues to predict a price adjusted for inflation of \$163 per barrel of oil in 2040. This is an economically painful number, and biofuels help reduce its impact. However, if the Committee were to consider the costs of climate change, biofuels become a necessity as increased domestic oil production will not provide the required lower carbon fuels, fuels that are promoted by the RFS.

By statute, fuels in the RFS advanced and cellulosic pools must deliver a GHG reduction at 50% and 60% respectively. Those reductions are measured off a 2005 baseline gasoline and diesel fuel which was far less carbon intensive than the current gallons of gasoline flowing from today's oils which include Canadian tar sands. The EPA is required to recalibrate the baseline every three years, however they have not done so since the inception of the RFS2. We urge Congress to instruct the EPA to complete the required revisions. It will help ensure a larger set of domestic bio-based feedstocks and biofuels that can participate in reducing our oil dependence and curbing the impact of climate change.

As we move forward and add additional gallons of advanced and cellulosic fuels, the impact of the RFS will be greater relative to the demand in the United States. EIA has projected that by 2035 we will be in the range of 36 billion gallons of offsets to the traditional transportation fuels market (See attached EIA slide, Appendix B). If overall demand remains in range of current use, this would represent around 16% of the total transportation fuels from renewable biofuels.

Question 4: How do the cost and benefits of the RFS compare to those of other federal policies to diversify fuels used in the transportation sector, diversify transportation options, and reduce oil dependence through other means?

Answer: The answer to this question will vary over time. The cost of any program near inception is significantly more than the cost of a program once it is mature. If you were to ask this same question as to the cost and benefits of developing hydraulic fracturing when we began to explore the R&D activities which helped develop this technology, the cost benefit analysis would be exponentially higher than that calculation today.

In fact, government investment into the technologies that are making possible the shale boom date back to the mid-1970s, including massive hydraulic fracturing, horizontal drilling, and 3-D seismic imaging. Over the course of more than two decades, the Department of Energy along with the Gas Research Institute invested significantly in technologies sometimes deemed “long shots” and participated in public-private ventures including the first successful multi-fracture air-drilled horizontal Devonian shale well in Wayne County, WV. We have provided a chart in

Appendix C that draws parallels between the current shale boom and the potential future of advanced biofuels industry.

For another example, though many claimed it to be too costly at first, once the low sulfur gasoline and diesel programs were fully implemented, large benefits were shown in terms of lives saved and emissions reduced. The RFS is a program still in its infancy and that will deliver high returns along the lines of other federal programs that address emissions reductions and the market entry of new technologies.

Question 5: What has been the impact of the RFS on oil prices? What has been the impact on gasoline and diesel fuel prices? What has been the impact on oil and fuel price volatility? How will these impacts change in the years ahead?

Answer: These comments have stated that we live in a global market when it comes to fuel prices and volatility. Currently the world uses around 88 million barrels a day of oil, of which the United States uses around 18.55 million barrels a day. Conversely this year's RFS target is 16.55 billion gallons a year of biofuel, or roughly 45 million gallons (1 million barrels) a day. It would be strange to assume at this juncture the 5% tail will wag the 95% dog. The entire world production of biofuels fell by 0.4% to around 60 billion gallons according to the 2012 BP statistical review. That said, 5% production of fuel from a source other than petroleum creates diversity and reduces supply risk. Significantly, almost half of global biofuels were made in the United States as a direct result of the RFS policy.

Over the scope of the 20th century the oil and gas industry has done a magnificent job of building an industry, providing affordable fuels for decades and creating a significant number of jobs across our economy. To assume that the advanced and cellulosic biofuels industry should be able to have as significant an impact as the oil and gas industry, which has had a 100 years head start, is unreasonable.

The advanced and cellulosic industry has enormous potential but only if the government stands behind a comprehensive policy to provide the necessary tools for commercial development. Due to policy uncertainty, many of the technologies that have been invented here in the United States are being courted by China, Brazil and other countries who see their promise and the significance of their low carbon potential. The advanced and cellulosic fuels are only now beginning to come into the market. Our industry is real and on the ground today. We are making fuels and the volumes are moving up significantly to provide a hedge against traditional fuels. We are not the single answer to the world's challenge of volatility but we are part of the solution.

Question 6: Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded? If so, how? If not, why not?

Answer: The original intent of the RFS was to create a class of low carbon fuels which utilize renewable biomass feedstocks. Currently, the EPA may add additional renewable feedstocks, potential transportation fuels, and process technologies to manufacture these fuels. Recently, legislation has been introduced which would allow ethanol made from natural gas to participate in the RFS. ABFA recognizes that the recent increase in our natural gas resources provides natural gas a significant opportunity to participate in the transportation fueling space. However,

given the original intent of creating a *renewable* fuel standard and the differences of the economic parameters at this time, we believe creating a separate standard for non-renewable, alternative feedstocks would be more equitable and provide a more robust policy framework. For those who have already made significant R&D investment under the framework of the RFS, including natural gas as a covered feedstock under the RFS would introduce a new variable in the middle of the game and might have severe implications for those investments already made, undercutting the economic viability of the advanced biofuels industry.

Thank you for the opportunity to comment on your questions, we stand ready to add additional information or answer any further questions you may have for our Association and its members.

Submitted by:

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Advanced Biofuels Association

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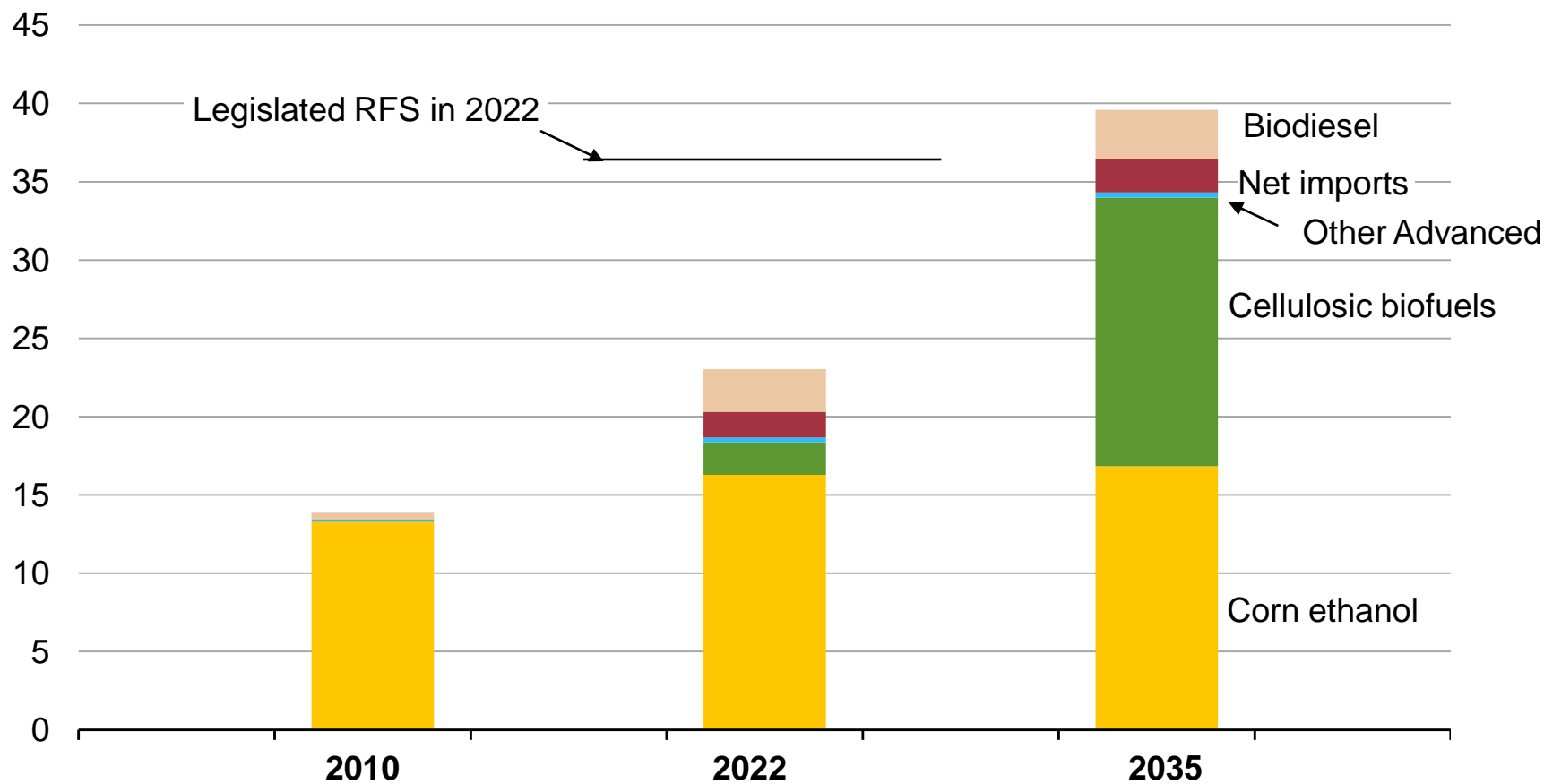
SWEETWATER

CTC
CENTRO DE TECNOLOGIA CANAVIEIRA



RFS encourages the production of cellulosic biofuels

billions ethanol-equivalent gallons



Source: EIA, Annual Energy Outlook 2012

Parallels: Shale Boom and Future of Advanced Biofuel

A number of key factors converged in the 2000s to create the US Shale Boom. A similar set of factors appear to be lining up in the advanced biofuels space with the potential to make such fuels a significant part of the US energy mix.

Factors	Shale Gas/Oil	Advanced Biofuels
Government Policy	Price structures, tax credits, and DOE initiatives/funding ops for over 2 decades.	Renewable Fuel Standard, tax credits, DOE/USDA/DOD initiatives/funding ops in place for 5 years so far.
Technological Innovation	Breakthroughs in massive hydraulic fracturing, horizontal drilling, drill bits, 3D seismic imaging , and fracking fluids.	Breakthroughs in agriculture, genetic engineering, nutrient recycling, crop protection, and processing/ treatment are greatly improving the cost competitiveness of energy crops.
Private Entrepreneurship	George Mitchell, industry pioneer, spent 2 decades developing Barnett shale and had the ability to self-finance. Today, shale gas/oil is transforming geopolitics and has the potential to create millions more US jobs.	Big companies like Shell, Tyson, and Dupont along with start ups like Solazyme, Kior, and Dynamic fuels are already commercializing advanced biofuels. Many have received significant private capital investment.
Land Rights & Intellectual Property	Private land ownership provided NG firms reasonable ROI on gas wells through lease agreements in lieu of protecting IP.	Energy crops often use marginal lands that are easy to acquire and genetic patents on energy crops are protected under U.S. patent law.
High Energy Prices	High natural gas prices in the 2000s made unconventional gas production profitable.	Despite huge increases in U.S. oil production, oil prices are set on the world market, driven by demand in developing nations, and remain high thereby incentivizing alternatives.
Financial Structures	The development of shale gas wells have benefited greatly from Master Limited Partnerships.	Legislation is gaining traction in Congress to provide renewable fuel and renewable chemical companies access to Master Limited Partnerships.
Favorable Geology/Geography	There are large recoverable reserves of shale gas across the U.S.	The U.S. has more arable land than any other country. Additionally, many energy crops utilize marginal lands unsuitable for traditional agriculture.
Water Availability	Slick water fracturing requires millions of gallons of water per well, which has thus far been available throughout many parts of the U.S.	Energy farms are being developed in areas with adequate water supply. Moreover, many energy crops do not require fresh water to grow and can utilize brackish water and waste water.
Infrastructure	An extensive network of gas pipelines existed in U.S. before Shale Boom took off.	Advanced biofuels are mostly “drop-in,” meaning they can be utilized within existing transportation infrastructure, including refineries, pipelines, fueling stations, and vehicles.



June 21, 2013

The Honorable Fred Upton
Chairman, Committee on Energy and Commerce
U.S. House of Representatives

The Honorable Henry Waxman
Ranking Member, Committee on Energy and Commerce
U.S. House of Representatives

RE: AEC Comments RFS White Paper: Greenhouse Gas Emissions and Other Environmental Impacts

Dear Chairman Upton and Ranking Member Waxman,

The Advanced Ethanol Council (AEC) appreciates the opportunity to comment on the Renewable Fuel Standard Assessment White Paper: Energy Policy. The AEC represents worldwide leaders in the effort to develop and commercialize the next generation of ethanol fuels, ranging from cellulosic ethanol made from dedicated energy crops, forest residues and agricultural waste to advanced ethanol made from municipal solid waste, algae and other feedstocks. The AEC is the only advanced biofuel group with the singular purpose of promoting advanced ethanol fuels and technologies.

General Comments on the RFS: As discussed in prior comments submitted as part of the white paper process, it is important to consider why the Renewable Fuel Standard (RFS) is necessary as an underlying component of any review of the program. If you investigate the history of ethanol use in the United States, it becomes evident that the U.S. liquid fuels industry is not price driven, open or competitive. In a competitive marketplace, if an innovator presents a valuable product for a competitive price, there is a reasonable expectation of demand. This free market principle gives investors a durable benchmark against which to judge the value of their product, which in turn attracts investment to better products. This important market dynamic is largely absent from the global liquid fuels marketplace for a number of reasons, including but not limited to the highly consolidated, vertically integrated characteristics of the oil industry, particularly with regard to wholesale markets, the anti-competitive price distorting behavior of OPEC, and blending constraints such as the blend wall. There is no better example of the consequence of this problem than ethanol, which has generally been offered at a significant discount to gasoline without increased demand significantly beyond the volume of fuel required for blending by the U.S. government.¹ With specific regard to the advanced biofuels industry, it is important to emphasize that one of the primary problems with a non-competitive marketplace is its failure to properly reward innovation. In other words, if the market does not necessarily demand a better and cheaper product,

¹ Some have argued that this discount reflects the lower energy density of ethanol relative to gasoline. This is a misleading argument, because ethanol also contains much higher octane (with lower toxicity) than gasoline, which puts ethanol in a much more expensive class of premium fuel products that are relied upon to meet the minimum performance and environmental standards for gasoline. It is not a coincidence that the primary alternatives to ethanol for octane trade at prices that often exceed \$5.00 per gallon.

then there is no impetus to create one (both from within and outside of the fossil fuel sector). This is one of the primary reasons why the United States remains largely dependent on petroleum to meet consumer demand for liquid fuels. It is also the overarching reason why the RFS is necessary. The RFS provides innovators with a predictable (and flexible) expectation for demand in a marketplace that does not properly reward innovation. Most importantly, the RFS is working. The RFS statutory schedule required 15.2 billion gallons of renewable fuel blending in 2012, of which 2 billion were advanced biofuels. The renewable fuels industry met the challenge. Just five years after the enactment of RFS2, the cellulosic biofuels industry is breaking through at commercial scale (see Figure 7).² Given the realities of world and domestic liquid fuels markets, the cornerstone of ongoing investment and development in the advanced biofuels sector is the consistent, unchanged and durable administration of the RFS. The alternative to the RFS – or any gallons waived from the RFS – is not innovation in other areas; it is simply more fossil fuels that are increasingly scarce and carbon intensive.

General Comments on the Impacts of the RFS on Energy Policy: The RFS is a tremendously valuable program from an energy policy perspective. In essence, the RFS has facilitated the emergence of a diverse new alternative fuel industry that produces a (liquid fuel) product that simultaneously: (a) reduces U.S. dependence on foreign oil; (b) reduces greenhouse gas emissions; (c) reduces gas prices and gives consumers a choice at the pump; (d) lowers tailpipe combustion emissions; and, (5) creates new jobs and economic development opportunities across America. In order to properly understand the true energy policy impact of the RFS, it is critical to take into account broader trends in the global liquid fuel marketplace itself. As part of the analysis of the energy impacts of the RFS, the AEC encourages the Committee to consider more broadly several important issues:

1. **The era of cheap oil is over.** As stated by Petrobras chief Jose Sergio Gabrielli, “the era of cheap oil is over.” This means that oil companies are shifting very quickly to increasing reliance on more expensive and riskier “unconventional” fuels – including tight oil (e.g. the Bakken), deep water (e.g. Gulf of Mexico, Deep Water Horizon) and Canadian tar sands (e.g. Keystone) – to meet the global demand for fuel energy.³ In essence, what the RFS does is send a signal to an oil-dominated marketplace to include renewable fuels in the quest to commercialize the next gallon of transportation fuel. More simply, the RFS ensures that low carbon renewable fuels emerge as a significant part of the portfolio of unconventional fuels in the future. As discussed above, the renewable fuels industry needs federal policy to drive this outcome because the global liquid fuels marketplace lacks free market forces – due to an over reliance on one type of fuel produced by a highly consolidated, vertically integrated industry – that would otherwise drive innovation and the commercialization of alternative, non-petroleum fuels. Notwithstanding misleading claims to the contrary, current global reserves of petroleum-based unconventional fuel (heavy oil, tight oil, etc.) are not proven and not cheap. They will be available to American consumers at a high cost, and only if the forecasters are accurate, emerging technologies actually provide access to these reserves, and

² See AEC Progress report, http://ethanolrfa.3cdn.net/96a2f9e04eb357bbbd_1sm6vadqk.pdf.

³ See http://www.eia.gov/forecasts/aeo/MT_liquidfuels.cfm#crude_oil

oil prices are very high. As such, it makes sense for America to continue to support a diversified portfolio of renewable and other types of transportation fuels. The RFS is critical to this effort.

2. **We do not really know what proven oil reserves have left in terms of output.** There is virtually no transparency when it comes to “source data” for the myriad of claims about future oil reserves. For example, Russia (one of the world’s largest conventional oil producers) declared all oil data a state secret in 2004. Neither Saudi Arabia nor Venezuela share data publicly when they make claims about future capacity. This is a concern in part because, as noted by an expert in the field of oil exploration and production, “there are political and financial pressures to misreport figures.”⁴ The pressures are obvious. OPEC member quotas are based on reported reserves; the higher the reserve, the higher the quota relative to other members. There is also the challenge of attracting investment, from both government and outside sources. As reported in a recent peer-reviewed article in *Science*, “there are fears that Saudi oil reserves (and others) may have been over-estimated by at least 40%,” and, “[a]t best Saudi reserves are seen as near maturity,” given that 7 million barrels of sea water are being injected in the main field on a daily basis to increase flow.⁵ The oil industry (and OPEC) also has the incentive of overestimating reserves to weaken political and market interest in developing alternatives. OPEC first admitted its concern about alternative fuels in 2006, when it openly admitted that its supply/price setting was designed partially to deter their use.⁶ In 2010, oil market analyst Stephen Schork explained that, “OPEC is more concerned about long-term market share than they are about short-term price gains [and when they set quotas] raising the entry barrier for alternative fuels. I speak with OPEC regularly, and this is consistently their main concern, about the political shift of the sentiment in the U.S. especially towards alternative fuels.”⁷ U.S. policymakers should be aware of, and to the extent possible protect consumers from, the lack of transparency and clear agendas of foreign regimes when it comes to forecasting supply and setting output quotas.

3. **There is a long history of vastly over-estimating “new oil reserves” that is directly relevant to current predictions about fracking, tar sands and heavy oil.** Any basic analysis of global oil reserve forecasting (and related market impacts) reveals a long history of inaccuracy and overestimation. Oil field discoveries in Alaska, the Gulf of Mexico and abroad almost always turn out to produce far less oil than originally predicted. And it is virtually impossible to validate the size of a reserve prior to the time period when the oil actually starts flowing out of the ground and empirical data can be analyzed. For example:

⁴ Chapman, I., *The end of Peak Oil? Why this topic is still relevant despite recent denials*, Energy Policy (2013). <http://dx.doi.org/10.1016/j.enpol.2013.05.010> at p. 3.

⁵ See Chapman, I., *The end of Peak Oil? Why this topic is still relevant despite recent denials*, Energy Policy (2013). <http://dx.doi.org/10.1016/j.enpol.2013.05.010> at p. 4.

⁶ See <http://www.foxnews.com/story/0,2933,222840,00.html>

⁷ See CNBC video at <http://www.dailykos.com/story/2010/08/18/894103/-OPEC-and-Low-Oil-Prices-Raising-the-entry-barrier-for-alternative-fuels#>

- a. In 2002, the U.S. Geological Survey estimated that the National Petroleum Reserve-Alaska contained 10.6 billion barrels (mean estimate) of oil. In late 2010, USGS revised their estimate to 896 million barrels – a downward adjustment of roughly 90 percent.⁸
- b. When BP discovered the Thunder Horse field in the Gulf of Mexico in 1999, they estimated that the reserve contained more than a billion barrels of oil. The discovery fundamentally changed projections about U.S. oil capacity and was credited with changing the global price of oil. BP and partners built the largest oil platform in the Gulf. However, oil extraction was delayed by more than 3 years due to technical difficulties, and according to a consultant for oil exploration, “Thunder Horse hasn't reached anywhere near its expected potential.”⁹
- c. With the world conventional oil fields clearly in decline, and deep water producing less oil than expected, proponents of the “domestic oil boom” claim that new extraction techniques are unleashing vast quantities of more difficult to reach “unconventional” oil like tight oil (via fracking), tar sands (via heating and other methods) and heavy oil (via heating and other methods). But a closer look at the data reveals that Canadian tar sands, deep water reserves, and Venezuelan heavy oil only “pencil out” when oil prices are high because of much lower Energy Return on Investment (EROI) rates compared to conventional oil. This is why those who predict a significant increase in domestic oil production over the next few years do not also predict any relief when it comes to oil prices (i.e. because the economics of unconventional oil extraction do not work if oil prices drop). So at minimum, and as confirmed by the U.S. Energy Information Administration (EIA), these new sources of oil come at tremendous cost to the consumer. But of equal concern, and as noted in an April 2013 article in *Science*, “data on reserves of many unconventional sources are now regarded as optimistic, compounded by thermodynamic inefficiencies in the processes, often relying on high energy inputs, will ultimately limit the net gain to provide fuel quantities well below predicted figures.”¹⁰ And even in the best case scenario, tight oil reserves are not as substantial as claimed by the oil industry. The 4.3 billion barrels of technically recoverable tight oil from the Bakken (as estimated by the U.S. Geological Survey) is less than one year’s worth of crude oil consumption by U.S. refineries.
- d. Proponents of the “domestic oil boom” also point to a recent International Energy Agency (IEA) report concluding that U.S. dependence on foreign oil will come down significantly due to the recovery of very large “tight oil” reserves (e.g. the Bakken). This is the same agency that in 2000 predicted that deep water reserves would supply massive quantities of oil to U.S. and global markets between 2000-2010, and oil prices would therefore be relatively low

⁸ See http://www.newsminer.com/news/alaska_news/oil-estimates-slashed-for-national-petroleum-reserve-alaska/article_999d982e-5823-59c2-82f7-8b6bb65d8fd6.html.

⁹ See <http://www.theoildrum.com/node/6415>.

¹⁰ Chapman, I., *The end of Peak Oil? Why this topic is still relevant despite recent denials*, Energy Policy (2013). <http://dx.doi.org/10.1016/j.enpol.2013.05.010>.

(\$28.25 per barrel) in 2010. In fact, those reserves did not come online as quickly or as substantially as predicted (see above), and the price per barrel of oil in 2010 was \$79.61.¹¹

4. **Assessing biofuels in a vacuum could lead to worse energy policy consequences.** Congress is right to ask and answer questions about the energy policy impacts of different fuels. However, we encourage Congress to avoid assessing biofuel production in a vacuum. It is one thing to be responsible about minimizing the potential negative impacts of a certain fuel, but it is quite another to arrest the development of one fuel (based on these concerns) if the real world alternative is measurably worse. It is quite clear that the alternative to renewable fuels under the RFS is unconventional oil in the near to intermediate term. While the United States does have reserves of tight oil in Bakken and Eagle Ford, these reserves are not enough to fundamentally change the energy picture for the United States when it comes to domestic fuel production. Stakeholders from many sectors will be submitting their ideas for how the RFS could be more (or less) protective of the broader energy policy goals of the country, but the AEC does not believe that opening up the RFS under any of these pretenses will ultimately result in a more effective policy when it comes to its primary objective of moving the United States toward greater energy independence and security via the increased production and use of clean renewable fuels. In fact, and as discussed in previous public comments submitted by the AEC as part of this process, changing the rules just one-third of the way through a 15-year policy commitment will discourage existing and future investors from relying on Congress to hold course when it comes to making clean energy investments. As former Shell Oil President John Hofmeister recently stated, “[w]e need a competitor for oil. We need to open the market to replacement fuels ... Competition will drive transportation fuel prices down, structurally and sustainably.” The need for competition for oil does not change by virtue of the emergence of new oil fields in the United States. The RFS is succeeding at providing competition, and it is critical that Congress not waiver on the 15-year program structure it established in 2007.

Please find below responses to the specific questions outlined by the Committee:

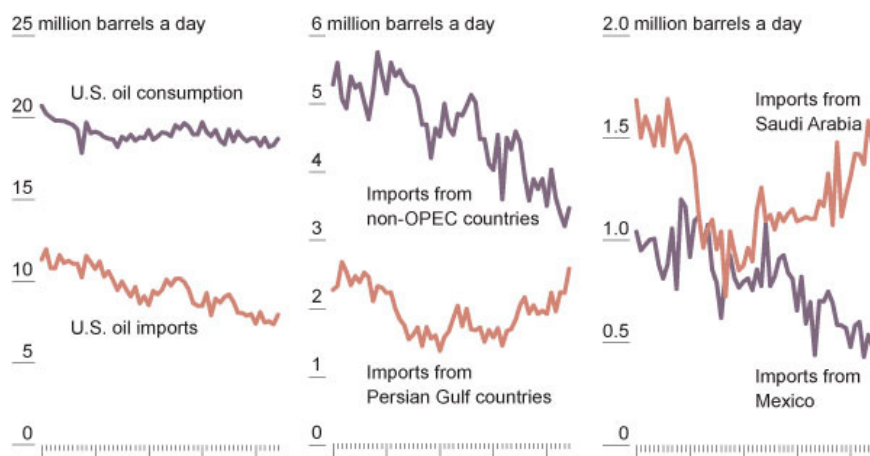
1. How vulnerable is the United States currently to major oil supply and price disruptions? In the context of rising domestic oil production and falling demand, how important is it to adopt new and strengthen existing policy measures to further reduce our dependence on oil?

The United States is highly vulnerable to oil supply and price disruptions because it produces such a small percentage of the world oil capacity (~8%) yet consumes vastly more oil than any other country. Put another way, the facts do not support the argument that the United States is insulating itself from the risk of global oil price shocks by virtue of its development of tight oil resources.

¹¹ For more information, see article in *Christian Science Monitor* at <http://www.csmonitor.com/Environment/Energy-Voices/2013/0520/When-oil-forecasts-get-it-wrong>.

First, the United States is not importing less oil from volatile regions. U.S. oil imports from the Persian Gulf hit a four year high in 2012; imports from Iraq and Saudi Arabia hit five years highs notwithstanding the development of tight oil resources like the Bakken and Eagle-Ford. See Figure 1 below.

Figure 1: U.S. Imports, Rate and Source



Source: New York Times

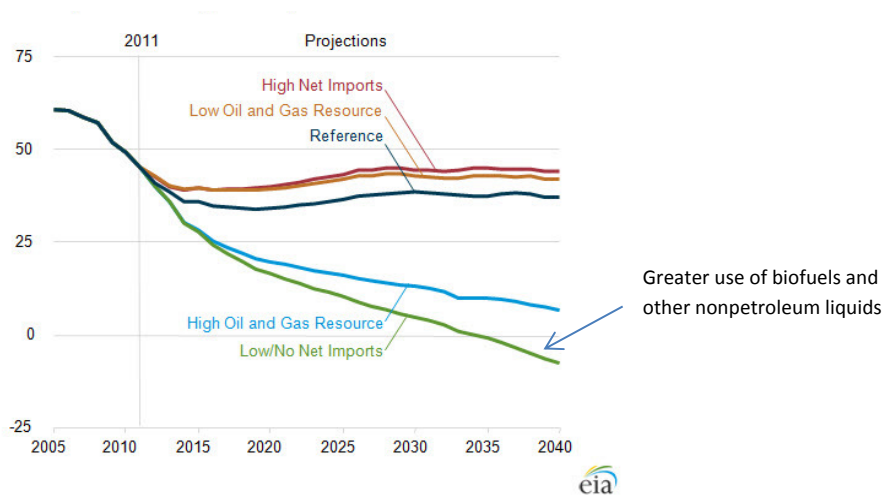
Second, even optimistic forecasts about U.S. domestic oil production show only a temporary reduction in U.S. foreign oil dependence. For example, the 2013 EIA forecast predicts that foreign oil dependence will drop over the next 5 years to a low of 48%, but will then increase again over the following two decades.¹² The reason for this is simple; tight oil formations do not hold enough recoverable oil to fundamentally change the energy picture for the United States in the longer term, and may deplete even more rapidly than predicted if you look at the history of oil resource forecasting. As discussed, the estimated 4.3 billion barrels of technically recoverable tight oil from the Bakken (U.S. Geological Survey) is less than one year's worth of crude oil consumption by U.S. refineries.

Third, the best case scenario for energy security involves the implementation of a diverse portfolio of alternative fuels. For example, the EIA ran hypothetical oil import scenarios as part of its world energy assessment for 2013 (see Figure 2). While these scenarios should not be taken literally, they illustrate the possibility of two best case scenarios in which U.S. dependence on foreign oil approaches zero by the 2030-40 timeframe. It should be emphasized that only these two scenarios fundamentally change U.S. dependence on foreign oil through 2040. The first scenario ("High Oil and Gas Resource") assumes that the United States continues to grow its domestic oil production very aggressively past 2020. In this scenario, the U.S. approaches (although does not achieve) zero foreign oil dependence in 2040. This scenario is extremely unlikely to happen, as it assumes never before achieved extraction rates of oil, from reserves both discovered and undiscovered, using "unforeseen" technologies in areas that have not even been explored. In fact, EIA predicts that tight oil production will decline (not increase) after

¹² See EIA Annual Energy Outlook, 2013, <http://www.eia.gov/forecasts/aeo/>

2020. The other scenario (“Low/No Net Imports”) achieves zero foreign oil dependence prior to 2035, based on the greater use of both domestic petroleum and alternative fuels including “greater market penetration of biofuels and other nonpetroleum liquids.”¹³

Figure 2: Net imports in Various Scenarios



As shown in Figure 2, it is quite clear that a diversified fuel portfolio puts the country in the best position to succeed when it comes to the bipartisan public policy goal of eliminating U.S. dependence on foreign oil. It would be highly counterproductive for the United States to somehow ease up on its commitment to renewable fuels – and the one policy that has brought fuel diversification over the last decade – because of the limited emergence of tight oil extraction technology. Changing the rules (vis-à-vis amendment to the RFS) just one-third of the way into the program will strand investment and significantly worsen our chances of eliminating or largely eliminating U.S. dependence on foreign oil.

2. How has the RFS contributed to improved energy security? To what degree should the reduction in U.S. oil imports be attributed to the RFS?

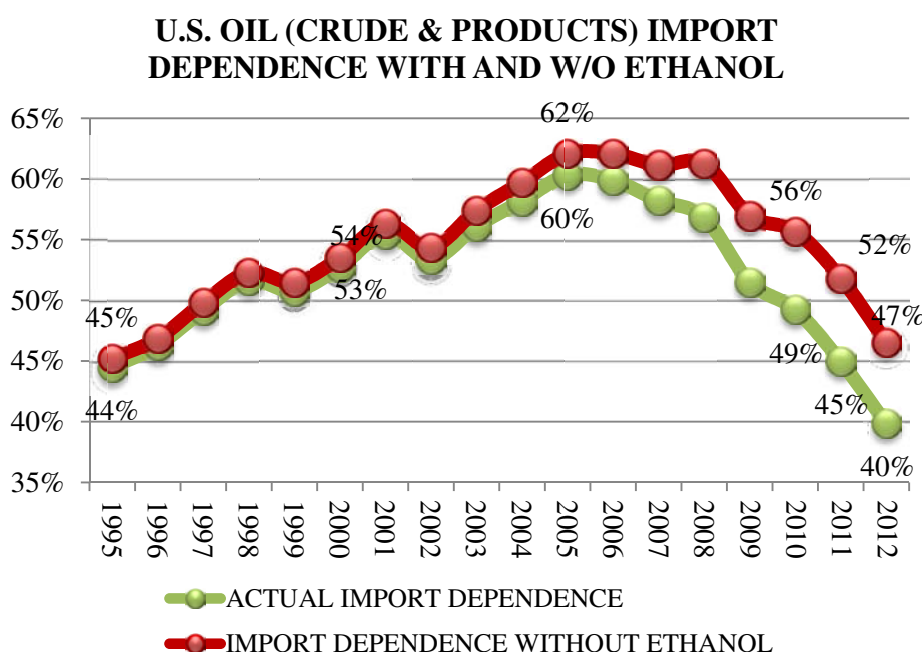
A number of factors have contributed to the net reduction in U.S. oil imports over the last several years, including the RFS, vehicle efficiency, higher gas prices and the resulting fewer miles travelled, and recent increases in domestic oil production. It is critical to note that while imports flattened and started to come down in 2005 (the year RFS1 was enacted), vehicle efficiency was relatively stagnant through 2010 and tight oil reserves did not come online until 2009 at the earliest.¹⁴ Under the RFS, 1.81 billion barrels (or 75.8 billion gallons) of renewable liquid fuel have been added to the marketplace since 2005. This volume of alternative fuel is having an undeniable impact on foreign oil dependence. OPEC acknowledged the impact of the RFS almost immediately after its passage, noting that it fundamentally changed their outlook when it came to making investments in new reserves and supplying world

¹³ See http://www.eia.gov/forecasts/aeo/IF_all.cfm#petroleum_import.

¹⁴ See http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national_transportation_statistics/html/table_04_23.html.

markets with crude oil.¹⁵ The Renewable Fuels Association (RFA) conducted an analysis designed to isolate the impact of ethanol – the predominant fuel promoted by the RFS to date, and one with tremendous upside as an advanced biofuel from alternative feedstocks – and their conclusions are shown below in Figure 3.

Figure 3: U.S. Oil Imports With and Without Ethanol



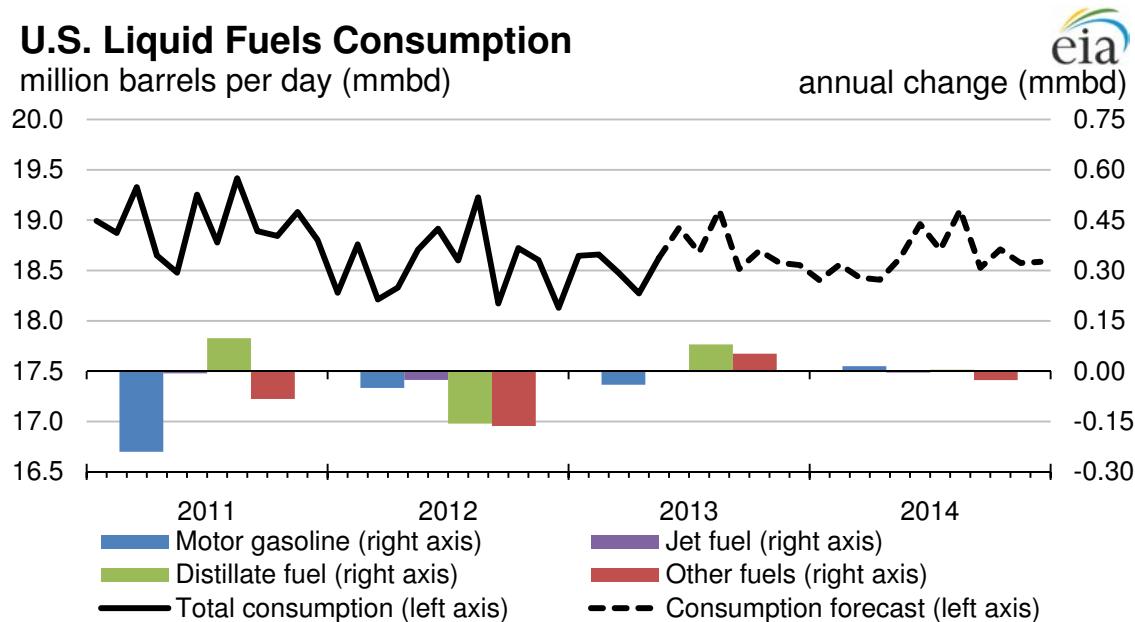
Source: Renewable Fuels Association

To put the magnitude of the problem in perspective, according to the Fuel Freedom Foundation one year's spending on foreign oil accounts for about half of our annual trade deficit, is equal to nearly half of President Obama's first stimulus plan, or half of the total amount spent directly on the Iraq War. Reducing these expenditures by 7 percent in 2012 (as shown) resulted in tens of billions of dollars recirculating through the U.S. economy instead of going overseas, even before considering the consumer savings of reduced gas prices from increased domestic liquid fuel supply.

3. In the context of rising domestic oil production and falling demand, to what extent does the RFS currently contribute to U.S. energy security, to what extent will it further contribute going forward?

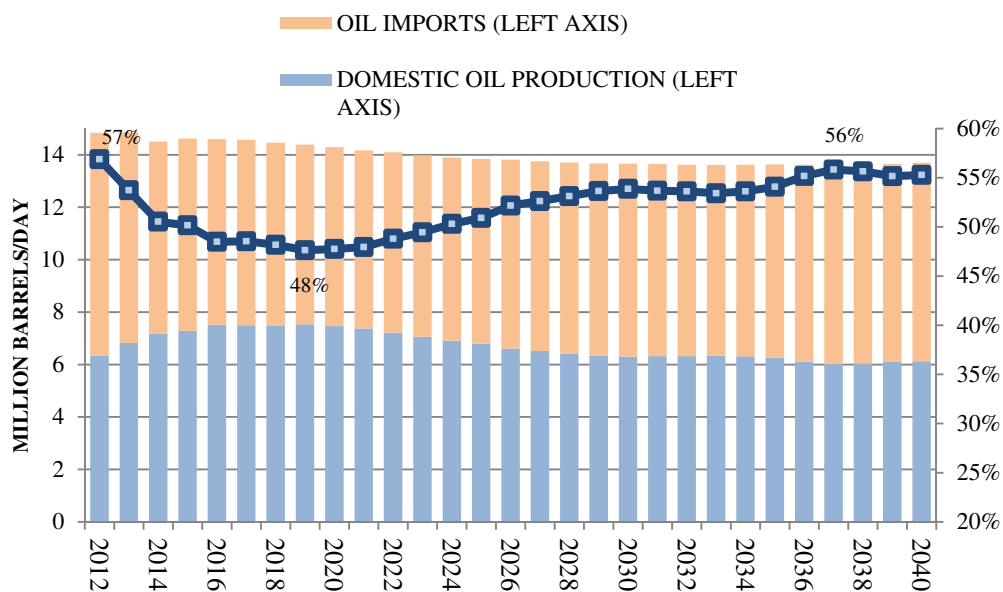
The current scenario of rising domestic supply and falling demand should not be allowed to provide a false sense of (U.S. energy) security because these market trends are not expected to be sustained over the intermediate to long term. First, the drop in U.S. liquid fuel demand has already plateaued and is not expected to decrease significantly over the coming years. See Figure 4 for 2013 EIA projections.

¹⁵ See http://www.opec.org/opec_web/en/press_room/863.htm, at slide 5.

Figure 4: U.S. Liquid Fuel Consumption 2011-2014

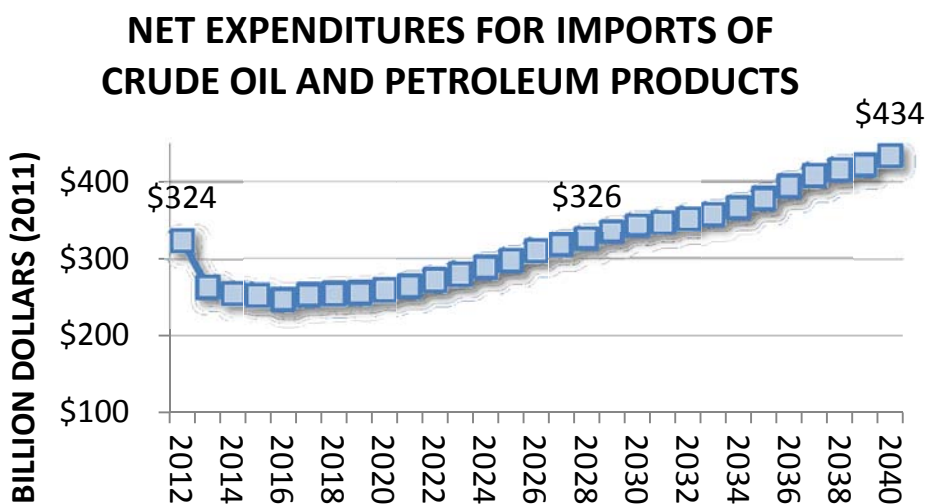
Source: Short-Term Energy Outlook, June 2013

Second, the recent EIA energy outlook – which is bullish on U.S. domestic oil production in the coming years despite more recent data suggesting that the oil industry’s projections for the Bakken and Eagle-Ford plays are too optimistic – predicts that oil imports will continue to shrink incrementally for only 6 more years, at which point oil imports increase again through 2037. See Figure 5 below.

Figure 5: U.S. Crude Oil Production, Crude Oil Imports and % Imported

Third, net (consumer) expenditures of foreign oil are expected to shrink for only 3 more years (through 2016) because of further increases in the price of oil in near to intermediate term. See Figure 6 below.

Figure 6:



Source: RFA, based on data from the U.S. Energy Information Administration

As such, the recent trends outlined in the question are not the new normal; but rather, a relatively brief aberration from recent historical trends toward increasing dependence on, and massive capital exportation for, foreign oil.

From the perspective of mitigating foreign oil dependence via the RFS, it is useful to establish the outer limit of the possible answer. The U.S. spent roughly \$324 billion last year on foreign oil. Every dollar spent on gasoline at the pump generates just 40 cents of economic activity because most of that dollar goes to pay foreign producers.¹⁶ The Institute for Local Self Reliance has estimated that the dollar retention for gasoline is much lower at about 25 cents per gallon. Conversely, domestically produced fuels benefit from the multiplier effect with each dollar spent generating an estimated three dollars in economic activity. This means that if the “Low/No Net Imports” EIA scenario discussed above could be achieved, it would generate almost \$1 trillion in new economic activity and raise the GDP by 2.5% a year. As noted by the Fuel Freedom Foundation, 2.5% is close to the growth rate (2.9%) for all of 2010.

The RFS has made considerable progress toward this longer term goal. We are through roughly one-third of RFS2 schedule (i.e. 5 of the 15 year commitment), and there are multiple studies showing a range of economic impacts. For example, a recent state-by-state analysis conducted by Cardno ENTRIX (commissioned by RFA) concluded that the ethanol industry alone supports roughly 383,000 direct and indirect jobs across all sectors, and contributed \$43.3 billion to GDP and \$30.2 billion in household

¹⁶ <http://www.fueelfreedom.org/the-real-foreign-oil-problem/oil-economics/>

income.¹⁷ The Congressional Research Service (CRS), the Department of Energy (DOE), the Department of Agriculture (USDA), the Environmental Protection Agency (EPA), and numerous U.S. national laboratories have conducted detailed analysis of the impact of the RFS on the agricultural sector, and generally conclude that the RFS has had a positive impact on jobs and economic output, especially in Rural America.

With regard to future impacts, the vast majority of renewable fuels required for use under the RFS through 2022 are advanced biofuels. According to the Sandia National Laboratory, the U.S. could produce 75 billion gallons per year of cellulosic biofuels (just one subset of the advanced biofuel industry) without displacing food and feed crops.¹⁸ This would represent more than half of current U.S. gasoline demand. A recent article by several analysts from the Oak Ridge National Laboratory found that the RFS is producing significant positive economic effects: “the net global economic effects of the RFS2 policy are positive with an increase of 0.8% in U.S. gross domestic product (GDP) in 2022...[well in excess of \$100 billion] stemming from the fact that the RFS is reducing crude oil prices, decreasing crude oil imports, increasing gross domestic product (GDP), and having only minimal impacts on global food markets and land use.”¹⁹

Much has been made of the alleged delays in the commercial deployment of cellulosic biofuels. However, as shown in the AEC Progress Report released in December 2012 (see Figure 7 below), the industry is breaking through at commercial scale just five years after the enactment of the amended RFS and notwithstanding the global recession.²⁰ As noted in recent documentation released by U.S. EPA, the production cost of cellulosic biofuels continues to fall and the industry continues to make significant progress towards producing cellulosic biofuel at prices competitive with petroleum fuels.²¹ These industrial benchmarks are also widely reported in a number of academic studies.²² For example, an industry survey conducted by Bloomberg New Energy Finance concluded that “[t]he operating costs of the [cellulosic biofuel] process have dropped significantly since 2008 due to leaps forward in the technology ... [f]or example, the enzyme cost for a litre of cellulosic ethanol has come down 72% between 2008 and 2012.”²³ As cellulosic biofuel production technology continues to mature, the U.S. advanced biofuels industry is ramping up to compete in the \$2.5 trillion global clean energy marketplace and deliver the advanced renewable fuels required by the federal Renewable Fuel Standard (RFS).

¹⁷ See http://ethanolrfa.org/page/-/rfa-association-site/studies/2012%20Ethanol%20Economic%20Impact_By%20State.pdf?nocdn=1.

¹⁸ See https://share.sandia.gov/news/resources/news_releases/biofuels-can-provide-viable-sustainable-solution-to-reducing-petroleum-dependence-say-sandia-researchers/.

¹⁹ See <http://www.future-science.com/doi/abs/10.4155/bfs.12.60?journalCode=bfs>.

²⁰ See AEC Progress Report: Cellulosic Biofuels at http://ethanolrfa.3cdn.net/96a2f9e04eb357bbbd_1sm6vadqk.pdf.

²¹ See Docket ID No. EPA-HQ-OAR-2012-0546: Regulation of Fuels and Fuel Additives: 2013 Renewable Fuel Standards

²² See: *Cellulosic Ethanol Heads for Cost-Competitiveness by 2016*, <http://about.bnef.com/press-releases/cellulosic-ethanol-heads-for-cost-competitiveness-by-2016/>; Brown, T., Brown, R. “A review of cellulosic biofuel commercial-scale projects in the United States.” *Biofuels*, Bioprod. Bioref. DOI:10.1002/bbb.1387 (2013).

²³ See <http://about.bnef.com/press-releases/cellulosic-ethanol-heads-for-cost-competitiveness-by-2016/>

Figure 7: Locations of Projects Profiled by AEC Progress Report²⁴



Non-U.S./Canada Technological Development, by Location

Cellulosic Biofuel Production Facilities Outside of the U.S./Canada Developing Technologies for Deployment in the U.S.



CHINA
Caofeidian
Shanghai



DENMARK
Kalundborg
Maabjerg



GERMANY
Munich
Straubing



ITALY
Rivalta
Crescintino



SPAIN
Salamanca

KEY		PILOT/DEMONSTRATION FACILITY
		COMMERCIAL FACILITY (UNDER CONSTRUCTION/COMMISSIONING)
		COMMERCIAL FACILITY (ENGINEERING STAGE)

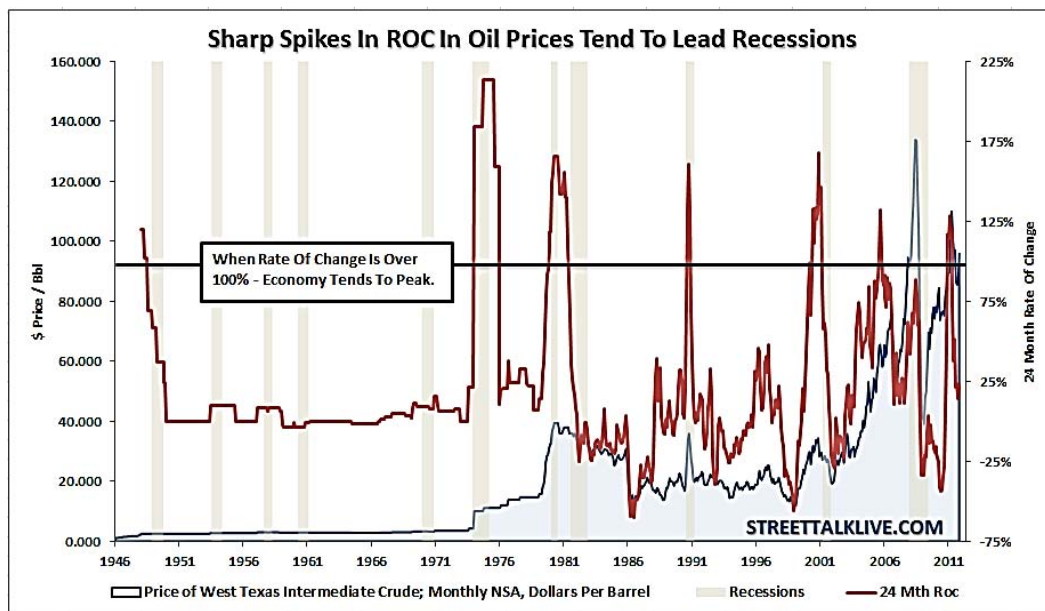
²⁴ To view full AEC Progress report, see http://ethanolrfa.3cdn.net/96a2f9e04eb357bbbd_1sm6vadqk.pdf.

4. How do the costs and benefits of the RFS compare to those of other federal policies to diversify fuels used in the transportation sector, diversify transportation options, and reduce oil dependence through other means?

There are certain aspects of the RFS that are easily quantified from a cost/benefit perspective. For example, the RFS reduces dependence on foreign oil, creates jobs and economic growth, reduces tailpipe emissions and mitigates GHG emissions *at no cost to the U.S. Treasury*. Oil companies have tried to argue that higher RIN prices, which reflect trading volume, are a cost of compliance. However, the oil companies acquire the RIN for free with the gallon of renewable fuel, which renders the argument moot. In addition, the body of evidence confirms that these broader energy security, economic and environmental objectives are achieved while simultaneously reducing the price of motor fuel (see Question #5 below). We are unaware of any policy that achieves the benefits enumerated at considerable cost savings to the U.S. Treasury (via reduced foreign oil dependence) and the consumer (via fuel prices).

What is more difficult to quantify is the full spectrum of indirect benefits created by augmenting fuel supplies and displacing foreign oil. For example, according to the EIA, oil price shocks cost Americans almost \$2 trillion between 2004 and 2009.²⁵ A leading economic researcher from the University of California, San Diego believes that there are tipping points in the magnitude of oil price shocks that send the economy into recession.²⁶ As shown in Figure 8 below, recession appears to result when the rate of change in oil price is over 100 percent.

Figure 8: Most Recent Recessions Correlate to Oil Price Shocks



²⁵ See <http://www.fueleconomy.gov/feg/oildep.shtml>.

²⁶ See http://www.econbrowser.com/archives/2009/05/Hamilton_JEC_2009_05_20.html.

Even relatively low levels of supply augmentation via renewable fuel can have a significant calming effect on petroleum volatility, which in turn saves consumers and the U.S. economy from the serious consequences of oil price shocks. For example, the head of global commodity research at Merrill Lynch noted that the oil price shocks of 2008 would have been at least 15 percent higher if not for the moderating influence of ethanol in the transportation fuels market. At \$125 per barrel, this translates into more than \$140 billion in savings to U.S. consumers in one year.²⁷

5. What has been the impact of the RFS on oil prices? What has been the impact on gasoline and diesel fuel prices? What has been the impact on oil and fuel price volatility? How will these impacts change in the years ahead?

Renewable fuels reduce fuel prices by: (a) adding liquid fuel supply, irrespective of price, to an increasingly constrained petroleum marketplace, which reduces price directly by virtue of the basic laws of supply and demand and indirectly by decreasing speculation and other market forces that create volatility; (b) replacing the need for other octane enhancers, which are far more expensive than wholesale gasoline; and, (c) selling at a per-gallon discount to wholesale gasoline (~ \$0.47/gal cheaper since 2010). Numerous studies have confirmed that the RFS reduces fuel prices via the market forces discussed above, including:

Author	Date	Per Gallon Impact	Additional Notes
Center for Agriculture and Rural Development	2012	↓\$0.29 from 2000-2011	↓\$1.09 per gallon in 2011 alone
Louisiana State University	2012	↓\$0.06 per billion gallons	↓\$0.78 per gallon based on 2011 gallons used under RFS
Center for Agriculture and Rural Development	2011	↓\$0.25 from 2000-2010	↓\$0.89 per gallon in 2010 alone
Center for Agriculture and Rural Development	2009	↓\$0.29-0.40	
USDA/DOE	2008	↓ \$0.20-0.35	
Merrill Lynch	2008	↓ \$0.50	
McKinsey/NREL	2008	↓ \$0.17	↓ \$0.18-0.63 per gallon in the future with more ethanol

6. Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded? If so, how? If not, why not?

Congress should be enacting forward-looking federal policies to further enhance energy security across a number of different sectors, but **not** via modification to the RFS. As discussed, innovation industries like the advanced biofuels industry are policy reliant because of the non-competitive, highly consolidated nature of the global liquid fuel marketplace. Free markets reward innovation; non-competitive markets do not. Dozens of advanced biofuel projects are under development notwithstanding the lack of free market forces because the RFS partially ameliorates the non-competitive nature of the global fuels market by providing clear and predictable demand targets over time. With the notable exception of the permanent federal tax incentives offered to fossil fuels and

²⁷ See http://www1.eere.energy.gov/biomass/pdfs/biofuels_are_helping_your_pocketbook.pdf

nuclear, we are unaware of any other federal energy policy that makes this type of long term commitment to achieve energy security. It would be disastrous for the advanced biofuel industry – and U.S. energy policy credibility in general – if Congress decides to change course on a landmark energy policy just five years in to a fifteen year commitment. Changing the RFS at this point will send a clear signal to the investment marketplace (for this and other energy policies) that Congress is willing to change the rules in the middle of the game, strand billions of dollars of investments and drive future innovation spending to other countries or sectors based on spurious claims by incumbent industries.

The oil industry understands the sensitivity of the investment marketplace to the mere perception of policy uncertainty, which is why the oil trade associations are putting so much effort into creating the perpetual prospect that Congress will weaken or repeal the RFS. It is important to note that this perpetual state of uncertainty on Capitol Hill, even when laws ultimately remain unchanged, is a serious global competitiveness issue because it stands in stark contrast to the extensive, multiyear commitments made by our competitors (e.g. China, Brazil) to the development of renewable energy. The RFS is the global gold standard when it comes to advanced biofuel policy. It is the U.S. advantage when it comes to attracting a quickly innovating, global advanced biofuels industry to the U.S. soil, and it has already fundamentally changed the U.S. liquid fuel marketplace for the better. But if there is no certainty going forward around the policy commitments that Congress has made, the private sector is not going to take the capital risk in a largely non-competitive marketplace despite the obvious value proposition of producing advanced biofuels at cost competitiveness with oil.

With regard to qualifying fuels, the RFS is already very broad. Virtually any type of fuel is eligible, as long as it is derived from renewable biomass and meets the greenhouse gas requirements of the program. Even electricity (used as fuel) and natural gas (derived from biomass) are now eligible for the RFS. As discussed, non-renewable, fossil fuels have enjoyed nearly a century of dominance when it comes to federal tax and other government support, infrastructural development, and facilitated demand in the marketplace. The RFS is designed to broaden the U.S. fuel portfolio beyond fossil fuels. New types of fossil fuels are not somehow blocked out of the marketplace because they are ineligible for the RFS; and as such, we encourage Congress to preserve the renewable requirement of the program.

Thank you for the opportunity to comment on the RFS.

Sincerely,

A handwritten signature in black ink, appearing to read 'R. Brooke Coleman', with a stylized, flowing script.

R. Brooke Coleman
Executive Director
Advanced Ethanol Council (AEC)

Alaska Trucking Association, Inc.

3443 Minnesota Drive · Anchorage, Alaska 99503 · Phone (907) 276-1149 · Fax (907) 274-1946

www.aktrucks.org

The authoritative voice of the trucking industry in Alaska

June 20, 2013

United States House of Representatives
Committee on Energy and Commerce
Chairman Fred Upton
2125 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Upton and the Committee on Energy and Commerce,

We work in trucking. While we strongly support policy measures that reduce our dependence on foreign oil, we believe the Renewable Fuel Standard, though well intended, is inhibiting the solvency and growth of our industry. Only by expanding the eligible feedstocks under the RFS to allow for competition to the corn ethanol monopoly will the transportation industry and our country in general enjoy a strong and affordable alternative fuel market.

We know from experience that the success of the trucking industry is directly dependent on the price of fuel. The impacts of expensive gas are incredibly far reaching, affecting all of our customers and the entire nation. We must do all in our power to tap into as many solutions as possible, to keep our trucks, and our economy, running smoothly.

We applaud your review of the RFS and encourage your taking action to amend our energy policy to meet modern demands. The current statute is out of date. The rapid increase in accessible natural gas reserves presents enormous opportunities to create an open and fair ethanol market, reduce the price of transportation fuel and increase domestic energy security, but current limits in the RFS effectively shuts natural gas out of the market. It's hard to see our colleagues, and their parent companies, shell out so much of their hard earned money at the gas pump when there is an abundant and cheaper alternative out there.



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We recently joined the Domestic Fuel Solutions Group, a coalition of fuel industry stakeholders who seek reasonable modification of the RFS. We are in support of HR 1959, a bill with strong bipartisan support which would expand the RFS to allow conventional ethanol to be made from natural gas. We implore you to consider the substantial benefits and broad base of support for this type of improvement during your review.

Sincerely,



Aves Thompson
Executive Director



If you got it, a truck brought it...



Mary Rosenthal

Executive Director

P.O. Box 369

Preston, MN 55965

(763)458-0068

mrosenthal@algaebiomass.org

Algae Biomass Organization

Comments to the Renewable Fuel Standard Assessment White Paper:

Greenhouse Gas Emissions and Other Environmental Impacts

The Algae Biomass Organization (ABO) appreciates the opportunity to provide comments to the Energy and Commerce Committee on the Renewable Fuel Standard (RFS) and its impact on energy security. ABO represents the entire algae value chain, from algae growers, researchers, fuel and oil producers to end users, including Fortune 500 companies, national laboratories and major universities.

ABO strongly supports the RFS because the RFS plays a critical role in driving the innovation needed for a strong American biofuel industry. The RFS provides the market “pull” for biofuels, incentivizing private industry to conduct the research, development, and deployment needed to commercialize their products at a competitive cost.

As the Committee’s White Paper on Energy Policy discusses, the energy landscape for the United States today looks significantly different than it did in 2007, with an increase in domestic oil production and a reduction in demand. The ABO agrees with the paper’s assertion that “part of the reduction in petroleum demand is attributable to the RFS itself.” The RFS volume mandate, as intended, has contributed to a reduction in demand for finite fossil fuel by replacing fossil fuel with renewable fuel.

We believe the RFS is an important policy tool in extending US fossil fuel supply by reducing demand. The RFS also incentivizes continued technological innovation necessary for long-term energy supply stability not only in the United States but world-wide.

Members of the ABO feel very strongly that the US government must take a long-term world-wide approach to energy security which would include continuation of a robust RFS. As the Committee’s paper points out, oil is traded on a global market and, therefore, oil prices are affected by international events. Countries like China, India, Brazil and Russia are developing rapidly, causing global oil demand to increase. The gap in oil consumption between the developed and developing world remains vast. For example, according to the CIA World Factbook for 2012, a US resident consumes more than eight times the amount of oil consumed by a resident of China. As other citizens of the world strive to improve their standard of living, we will inevitably see an increase in the worldwide demand for oil.

Long term increases in the global demand for oil will not be met only with finite fossil resources. While ABO supports continued research into how to best develop and use our fossil resources, we believe it is essential to concurrently develop a strong biofuel industry. Our goal should be to meet global demand while containing prices. Continuation of the RFS is important to keeping on track US efforts to meet this goal.

The biofuel industry, like many energy industries today, is capital intense and requires long-term planning, research and development. Achieving technology readiness itself takes years or even decades of work and billions of dollars in investment. And technology readiness is essential to deploying technologies at a meaningful scale in a relatively short amount of time. The RFS is an important policy tool for incentivizing private industry to continue to work toward technology readiness.

ABO believes that the RFS could be more effective in increasing energy security with a feedstock neutral approach where “cellulosic” and “advanced” biofuel designations are combined, thereby incentivizing development of all biofuels. We believe feedstock neutrality in the RFS is essential to developing a full portfolio of biofuels including the many promising technologies currently in development and those currently unknown.

In a 2013 survey of the algae industry conducted by ABO, 90 percent of algae producers said that supportive federal policy, like the RFS, would accelerate hiring, illustrating the importance of the RFS to building a domestic biofuel industry.

The federal government should continue to promote use of biofuels through the RFS in order to develop renewable transportation fuels and chemicals which are essential to long-term energy security. The energy landscape will continue to change and we must position ourselves to meet worldwide energy challenges beyond the foreseeable future. A stable, robust Renewable Energy Standard is key to reaching this goal.

Sincerely,

A handwritten signature in cursive script that reads "Mary Rosenthal".

Mary Rosenthal
Executive Director

Algae Biomass Organization

mrosenthal@algaebiomass.org

www.algaebiomass.org



June 21, 2013

The Honorable Fred Upton
Chairman
House Energy and Commerce Committee
2125 Rayburn House Office Building
Washington, DC 20515

The Honorable Henry Waxman
Ranking Member
House Energy and Commerce Committee
2125 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Upton and Ranking Member Waxman:

On behalf of the 600 members of the American Coalition for Ethanol (ACE), I appreciate the opportunity to comment on the Committee's fourth Renewable Fuel Standard (RFS) White Paper, this time focusing on global energy markets and U.S. energy policy.

ACE was founded in 1987 by advocates who believed ethanol would revitalize rural America by enabling farmers sustainably harness resources to help reduce U.S. dependence on foreign oil. Today ACE includes farmers, ethanol producers, Main Street businesses, science and technology firms, engineers and manufacturers, and industry suppliers who have stood shoulder to shoulder to innovate and grow the domestic ethanol industry in communities throughout the U.S.

Contrary to popular belief, the U.S. transportation fuels market is not free or fair. Free and fair markets ensure competition and reward low-cost alternatives. Left to their own devices in today's petroleum-heavy marketplace, oil companies erect barriers to competitors like ethanol and refuse to incorporate legal, safe, clean, and affordable higher ethanol blends. Oil companies also cling to taxpayer subsidies, some which have been in the Tax Code for 100 years. The RFS is the only policy tool to help level the playing field so consumers have access to renewable, clean, affordable alternatives.

Moreover, the only way to completely avoid global oil supply and price shocks is to replace oil with alternatives such as ethanol. Since enactment of the RFS, the U.S. has become significantly less vulnerable to oil supply and price disruptions. It is critically important for Congress to maintain the RFS.

We appreciate the opportunity to explain how the RFS is a classic American success story, delivering clean air, environmental, and octane benefits. Below please find our responses to your questions.

Sincerely,

Brian Jennings, Executive Vice President
American Coalition for Ethanol (ACE)

1. How vulnerable is the United States currently to major oil supply and price disruptions? In the context of rising domestic oil production and falling demand, how important is it to adopt new and strengthen existing policy measures to further reduce our dependence on oil?

The oil marketplace is global. Increased domestic oil production in recent years does nothing to absorb supply or price shocks, now or in the future, given the appetite for oil globally continues to rise. Between growing demand for oil in China and other developing nations and market manipulation on the part of OPEC, the U.S. is very vulnerable to oil price shocks.

In response, the U.S. has adopted certain conservation and efficiency measures which help reduce oil demand, but there's no getting around the fact that the U.S. economy and way of life depends upon the use of transportation fuel.

Therefore, the only way to completely avoid oil supply and price shocks is to replace oil with alternatives such as ethanol. Since enactment of the Renewable Fuel Standard (RFS), the U.S. has become significantly less vulnerable to oil supply and price disruptions. It is critically important for Congress to maintain the RFS.

2. How has the RFS contributed to improved energy security? To what degree should the reduction in U.S. oil imports be attributed to the RFS?

U.S. energy security has improved significantly since passage of the original RFS in 2005 and RFS2 in 2007. According to the Energy Information Administration (EIA), prior to enactment of the first RFS, U.S. dependence on foreign oil stood at 62 percent in 2005. Since enactment of RFS and RFS2, U.S. foreign oil dependence dropped to just 40 percent in 2012. Some suggest increased tight oil production from places such as the Bakken Shale Formation in North Dakota should be credited for this import reliance reduction. However, the RFS deserves more credit. Without the RFS, U.S. dependence on foreign oil would be nearly 50 percent in 2012.

ACE published an info graphic this year to illustrate the contribution the RFS makes to U.S. energy security and moderating gasoline prices.¹ This info graphic shows would take nearly three Keystone XL pipelines (4.85 billion gallons annually according to the State Department) or three and one-half Bakken Shale Formations (3.7 billion gallons annually according to EIA), to make enough gasoline to replace the new sustainable fuel volume that the U.S. ethanol industry has created as a result of the RFS. Put another way, U.S. ethanol production from the RFS is nearly three times greater than the gasoline from the Keystone XL pipeline, and nearly four times greater than the gasoline which could be refined from the Bakken.

Finally, in 2012 ethanol replaced the need for more than 462 million barrels of foreign oil. That's more oil than we bought Saudi Arabia and more than we bought from Russia, Kuwait, and Iraq combined.

¹ "It's Working," RFS Infographic. American Coalition for Ethanol. Retrieved from http://ethanol.org/pdf/contentmgmt/RFS_Infographic_American_Success_Story.pdf

3. In the context of rising domestic oil production and falling demand, to what extent does the RFS currently contribute to U.S. energy security and to what extent will it further contribute going forward?

As a result of the RFS, U.S. renewable fuel production and use has ramped up to help displace oil dependence and gasoline use. Rising domestic oil production today may dry up tomorrow. Moreover, it is important to recognize that the oil marketplace is global, so it's intellectually dishonest to suggest the U.S. oil market can be compartmentalized or insulated from worldwide supply and demand factors.

If the Committee is suggesting that oil demand is falling, why is there a frantic push by some Members of Congress to approve the Keystone XL Pipeline, which would transport expensive and environmentally-damaging Tar Sands oil from Canada to ports for export?

Without the RFS, which ensures cost-effective and domestic alternatives to oil play a role in our nation's energy security, the U.S. would have absolutely no control or ability to limit actions by OPEC or global market forces that would lead to rising oil prices, which would negatively impact consumers and the total U.S. economy.

To that end, efforts to expand ethanol usage through higher ethanol blends such as E15 and E85 is critical. The RFS, as currently constructed, will play a critical role in instructing the marketplace to adopt these higher blends and further increase our energy security.

4. How do the costs and benefits of the RFS compare to those of other federal policies to diversify fuels used in the transportation sector, diversify transportation options, and reduce oil dependence through other means?

While the U.S. ethanol industry voluntarily sacrificed the blenders' tax credit in 2011 and corn ethanol today receives zero taxpayer support, oil companies continue to cling to taxpayer subsidies. Indeed, our nation's dangerous and risky reliance on oil is also very expensive for American taxpayers. Oil companies have enjoyed certain tax subsidies for 100 years. The oldest, continuous tax subsidy for oil companies was enacted by Congress in 1913. The list of current oil specific tax subsidies includes the following:

- Expensing of Intangible Drilling Costs
- Percentage Depletion Allowance
- Deduction for Tertiary Injectants
- Geological and Geophysical Expenditures
- Exception for passive loss limitations for oil and gas
- Enhanced oil recovery credit
- Marginal oil well credit

Global fossil fuel subsidies reached almost half a trillion dollars in 2010². This figure is up \$110 billion over 2009 and could reach \$660 billion by 2020. According to the General Accounting Office, \$130 billion in government subsidies have gone to the oil industry from 1968-2000.³

² ["World Energy Outlook 2011 Factsheet,"](http://www.ethanolrfa.org/pages/ethanol-facts-energy-security#sthash.cue3EON7.dpuf) International Energy Agency, October 2011.
<http://www.ethanolrfa.org/pages/ethanol-facts-energy-security#sthash.cue3EON7.dpuf>

The RFS is the only federal policy which costs taxpayers nothing, dramatically diversifies and improves how we produce and use transportation fuel, and at the same time reduces our dependence on foreign oil. As such, no other federal transportation fuel policy can compare. If oil companies cannot stand on their own two feet after 100 years of clinging to certain taxpayer subsidies, Congress shouldn't hurt American consumers by repealing the RFS, a policy that helps level the playing field with oil a little bit by giving people affordable and renewable fuel choices.

5. What has been the impact of the RFS on oil prices? What has been the impact on gasoline and diesel fuel prices? What has been the impact on oil and fuel price volatility? How will these impacts change in the years ahead?

American families spent nearly \$3000 on gasoline in 2012; more than they've spent on gasoline in more than three decades. But blending ethanol with gasoline helps temper the pain at the pump. In the last 18 months wholesale ethanol prices have been as much as \$1.20 per gallon lower than gasoline. Economists at the University of Wisconsin and Iowa State found that ethanol reduced wholesale gasoline prices by an average of \$1.09 across the U.S. in 2011. This decreased household spending on gasoline by \$1200 for the typical American family last year. The best way to reduce gas prices is to replace expensive gasoline with lower cost ethanol.

6. Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded? If so, how? If not, why not?

Congress was wise to provide EPA with most of the tools it needs to modify or enhance the RFS as needed, including approving pathways for additional feedstocks/fuels that will diversify our renewable fuel supply. As such, ACE doesn't support legislative changes to RFS at this time.

³[Tax Incentives for Petroleum and Ethanol Fuels](#)," GAO/RCED-00-301R (U.S. General Accounting Office, September 25, 2000).

Questions for Stakeholder Comment

1. How vulnerable is the United States currently to major oil supply and price disruptions? In the context of rising domestic oil production and falling demand, how important is it to adopt new and strengthen existing policy measures to further reduce our dependence on oil?

The United States is always at risk of major oil supply and price disruptions. We consume over 1/5 of the world's oil¹, and therefore even the smallest shift in price or supply will leave an impact on our pockets and economy. As a result of our over-consumption of this non-renewable resource, we have increased oil production at astonishing rates due to technological breakthroughs. More often than not, however, this is done in an unsustainable fashion with fracking for oil shale and drilling for petroleum. From 2011 to 2012, there was a 14% increase in oil production¹, and the United States, is now the third leading producer of oil behind Saudi Arabia and Russia at 9 million gallons a day¹. This is all positive news, except for the fact that the U.S. produces only 1 of every 10 barrels of oil in the world¹, but still consumes more than 2 of every 10 barrels². As a result of political strife and economic uncertainty in OPEC countries, the U.S. must always keep a wary eye on outside developments, diverting money and resources to regions that, aside from oil, have very little to do with the progress of our own country. We have now turned to neighboring Canada for the greatest source of our oil supply and production due to their increases in oil production. Perhaps most importantly, supply and price for domestic oil is affected from natural events too. In 2011, due to Mississippi River flooding, refiners feared damages to facilities in the area and gas prices soared to above \$3.50/gallon². Hurricane Isaac in 2012 forced facility closures along the Gulf Coast, leading to \$3.93/gallon gas prices². Additionally, local distribution shortages in California last year led to \$4.50/gallon² prices at the pump.

Oil prices and supply do not just dictate how much we pay for gasoline at the pump. It is tied closely into so many other commodities that we buy, the most important, being food. The prices of food have been shown to very closely follow the rise and fall of oil prices and demand. Production and distribution of food products are extremely energy intensive processes and, in turn, oil intensive processes. From farm machinery to the transportation to consumers to the oil-based chemicals used in the process, oil puts pressure at all angles of the food cycle. As an example, fuel costs represent upwards of about 50-60% of the total cost for operating ships³. Biofuels serve as a viable replacement to oil because they are a non-fossil fuel drop-in replacement. Many biofuels can be placed in existing machinery that is built for gasoline

¹ Gold, Russell. (2013, June). U.S. Oil Notches Record Growth. Wall Street Journal. Retrieved from <http://online.wsj.com/article/SB10001424127887324049504578541601909939628.htm>.

² Amadeo, Kimberly. (2013, May). Crude Oil Prices Definition. About US Economy. Retrieved from http://useconomy.about.com/od/supply/p/oil_gas_prices.htm.

³ Record Fuel Prices Place Stress On Ocean Shipping. 2nd May, 2008. World Shipping Council. Retrieved from: http://www.worldshipping.org/pdf/WSC_fuel_statement_final.pdf

combustion. Food and Fuel are two things that Americans cannot live without, and there is a need for even more aggressive policy to strengthen the Renewable Fuels Standard subverting the political and environmental threats that oil brings.

In terms of strengthening existing policy measures to further reduce our dependence on oil, it is critical to fully comprehend another major factor being clearly manifested at this very time in demonstrations before the Congress – false propaganda in order to sway the political process to maintain oil dominance in the marketplace. Resource availability, technological and scientific advances, and the value of the full range of externalities, no longer determine market share for various transportation fuels – its political clout influenced by false propaganda. Two current examples: 1. Harley Davidson motorcycle riders circling the capitol and visiting congressional offices to persuade votes against E-15. EPA regulations do not allow the use of this fuel in motorcycles; and, motorcycles have easy access to ethanol free gasoline; and. 2. Restaurant associations demonstrating against the RFS claiming that corn-based ethanol leads to an increase in meat and dairy prices. It is well established that oil costs have a greater impact on these prices than the price of corn; and, the availability of distillers grains replacing a good percentage of the feed for animals is offsetting. And then there is the issue of meat, particularly fatty meats in healthy diets is losing popularity. This is already leading to less corn in some animal diets. Established facts and issues like sustainability, climate change, short and long range economics and job creation -- and not misleading propaganda, should govern the political process.

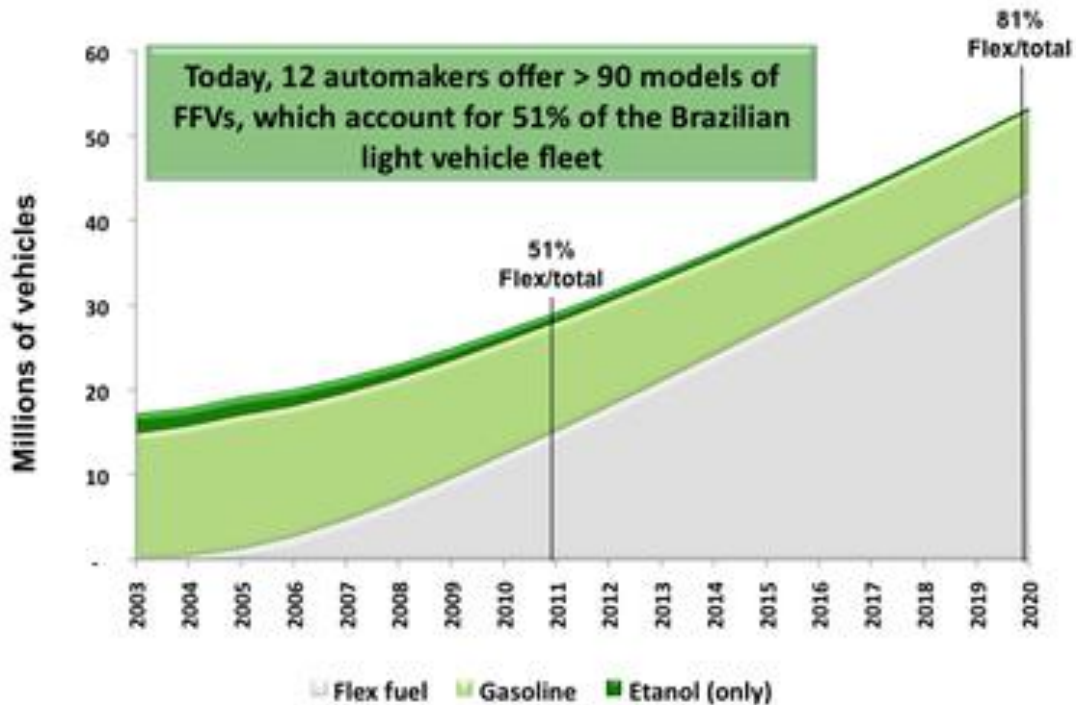
There is also a major policy option that will significantly reduce our dependence on oil and improve the nation's health and economy. In Section 202 of the 1990 Clean Air Act Amendments, EPA was required to reduce aromatics in gasoline to the extent possible. EPA designed questionable models to determine the most cost effective approach and established a 25% ceiling on benzene, toluene and xylene with no mention of other chemicals in the aromatics group. It soon became clear that aromatic levels could be appreciably lowered with important economic and human health benefits and at the same time boost the market share in the light duty transportation sector for sustainable alcohols. There is plethora of information to fully justify lowering the aromatic levels in gasoline to be replaced by renewable alcohols. This information is available to the Committee, and in some cases has already been supplied by several forces. In summary, here are the benefits of EPA, using existing authorities, to reduce aromatic levels in gasoline, boost levels of renewable alcohols, incentivize the production of flexible fuel vehicles (FFV), and encourage funding support at the state and federal level for the inclusion of blender pumps at refueling stations:

- Reduce oil dependency
- Reduce gasoline prices
- Give drivers options

- Reduce carbon emissions (heavy carbon emissions in gasoline are 40% greater than diesel fuel due to the heavy carbon nature of ultra fine particulates (UFP). This is in addition to the reduced carbon footprint of ethanol production and use which is steadily improving
- Reduce health related costs by tens of billions of dollars annually as verified by a Harvard and other studies.
- Permit the auto industries to transition up to 93 octane gasoline as a standard fuel thereby optimizing engine performance through direct injected and higher compression/turbocharged engines.
- Permit the attainment of CAFÉ standards by 2025 – 54.5 MPG
- Reduce greenhouse gas emissions and put America on the path to sustainability
- Give drivers choices based on costs and desires in terms of sustainability and carbon footprints honestly established.
- Catch up with Brazil in terms of the availability of FFV and fuel choices. See the attached chart on FFV growth in Brazil.
- Maintain the U.S, as a world leader in biofuels. We could slip rapidly as indicated by the following:

In France, Amyris and Total announced a successful demonstration flight at the Paris Air Show its renewable jet fuel made from Amyris Biofene and, ultimately, from plant sugars. The Airbus A321 aircraft powered by two Snecma CFM56 jet engines flew from Toulouse to Paris with a blend of renewable jet fuel produced by Amyris and Total. This demonstration flight was in support of the French Initiative for Future Aviation Fuels, which seeks to produce and commercialize alternative, renewable and sustainable aviation fuels in France in the coming years.

NATIONAL AUTOMOBILE AND LIGHT VEHICLE FLEET



Source: UNICA

Note: Otto Cycle refers to vehicles powered by gasoline and ethanol, as well as flexible fuel vehicles.

Brazil FFV Projections

2. How has the RFS contributed to improved energy security? To what degree should the reduction in U.S. oil imports be attributed to the RFS?

As mentioned above, the United States deploys tremendous resources to oil-rich areas, which are also troubled regions. Countries such as Venezuela and Nigeria, although oil rich, have politically unstable regimes or in the case of Nigeria, a massive environmental crisis on its hands from the negligence of oil production. Billions of dollars are spent on military presence in the Persian Gulf area to protect oil interests. All oil-related costs are estimated to be \$825 billion dollars per year⁴, with military costs alone constituting anywhere from \$27-\$137 billion³. By easing the stress we put on oil imports, we could shift much of the military budget towards protecting our home soil instead of foreign interests, thereby cycling that money into local the economy. We also take our service men and women out of potentially volatile situations.

The dynamics of our oil dependence is shifting, in large part due to the Renewable Fuels

⁴ "The Hidden Cost of Oil," Milton R. Copulos, 2007, and "Securing Foreign Oil: A Case for Including Military Operations in the Climate Change Impact of Fuels," Adam J. Liska and Richard K. Perrin, July/August 2010.

Standard. The volume of U.S. ethanol since 2011 has contributed to 6 of 10 barrels of new U.S. produced liquid fuel since 2005. From an import dependence on petroleum of 60% in 2005 (the inception of the RFS)⁵, import dependence has dropped to an estimated 41% in 2012. The EIA has reported that ethanol growth since 2005 displaces hydrocarbon fuels that have been mainstays in the transportation sector for years. Since 2005, crude oil imports from the Persian Gulf region have decreased by 25% thanks in part to increased oil production at home, but also the displacement of oil by ethanol in blended fuel⁶s. In 2012 alone, the volume of petroleum that was displaced by ethanol saved an estimated \$50 billion⁷. Ethanol represents one of four gallons of fuel for light duty vehicles³ from domestically produced sources, and this number will only grow thanks to the Renewable Fuels Standard.

3. In the context of rising domestic oil production and falling demand, to what extent does the RFS currently contribute to U.S. energy security and to what extent will it further contribute going forward?

Due to a lack of essential action on the part of the Congress of the United States to deal adequately with climate change, multiple actions are being taken by an increasing number of citizens to reduce the nation's carbon footprint and to lead the world in this effort. It is critical that they be provided opportunities to further the impacts of their commitment. Choices at the pump are certainly one of the most important opportunities to manifest their determinations. To leave that choice to the oil industry and their ability to manipulate liquid and gaseous fossil fuels, would be an egregious error. The RFS has already weakened their stronghold at the pump, but its demise would abandon options and leave the public and the nation more vulnerable to international oil interests. The RFS and its continued support, is America's best bet in letting the market decide, at the pump, what kind of future its citizens want – need. Today, the pump and the ballot box are key places in setting the stage for making needed changes in society. For over 100 years, oil companies have had control over the pump, and their economic and political clout certainly impacted the consequences of the ballot box. The RFS limits their control, and that is why they sent in the motorcyclists and the restaurateurs to influence the impact of the ballot box.

4. How do the costs and benefits of the RFS compare to those of other federal policies to diversify fuels used in the transportation sector, diversify transportation options, and reduce oil dependence through other means?

Various policies are in place to compliment the Renewable Fuels Standard (RFS). A byproduct of the RFS is a Renewable Identification Number (RIN), which is a serial number

⁵ Ethanol Facts: Energy Security. 2013 March. Renewable Fuels Association.
<http://www.ethanolrfa.org/pages/ethanol-facts-energy-security>.

⁶ "U.S. Oil Imports: Context and Considerations," CRS Report for Congress R41765, Congressional Research Service, April 1, 2011.

⁷ Issues & Resources. Nebraska Ethanol Board. Retrieved from: <http://www.ne-ethanol.org/?page=issues>.

assigned to a batch of biofuels. RINs have a value attached to them and closely mimic the Renewable Energy Certificates (RECs) that utilities are required to buy to meet standards for renewable energy generation. In the case of RINs, companies that import or blend biofuels, are required to meet certain blend standards enforcing the RFS⁸. One of the benefits of domestically produced ethanol is that gasoline prices have significantly decreased and injected much needed competition into the transportation fuels marketplace. In an ideal world, there will be no need for RINs because all of our transportation fuel will be renewable, eliminating the need to incentivize the system.

Up to 29 states and the District of Columbia have a Renewable Portfolio Standard (RPS)⁹ to ensure that various sources of energy are used to satisfy both their transportation and stationary needs, depending on the kind of energy they have more of (Arizona produces more solar than Iowa, which is biofuel rich). The federal Renewable Electricity Standard mandates that 25% of electricity is renewable by 2025⁹.

Finally Title IX of the Farm Bill has implications on the success of aspects of the RFS. The 2008 farm bill attempts to bring the focus on non-corn based feedstock, with the Biomass Crop Assistance Program (BCAP)¹⁰. The RFS has growing demand for ethanol from different non-edible sources such as Cellulosic, Biomass-based Diesel, and Advanced Biofuels. Another program within the farm bill is the Renewable Energy for America Program (REAP) which funds projects, which install blender pumps to counteract the blend wall¹¹ and keep the current levels of ethanol production at 13 million gallons and counting. In 2013, the Senate has moved to retain mandatory funding as well as add new funding to the programs, while the House has not specified any mandatory funding. It remains to be seen where or if the two sides meet, because the RFS will certainly be impacted from a project and policy standpoint.

5. What has been the impact of the RFS on oil prices? What has been the impact on gasoline and diesel fuel prices? What has been the impact on oil and fuel price volatility? How will these impacts change in the years ahead?

The Renewable Fuels Standard has a vast impact on oil prices in the sense that we are saving money we replace oil costs with. It was estimated that \$50 billion⁸ was saved in 2012 by the displacing of the equivalent volume of petroleum by ethanol. The U.S. uses 25% of the

⁸ Questions and Answers on Changes to the Renewable Fuel Standard Program (RFS2). United States Environmental Protection Agency. Retrieve from:

<http://www.epa.gov/otaq/fuels/renewablefuels/compliancehelp/rfs2-aq.htm#9>.

⁹ 25 January, 2013. What are renewable portfolio standards (RPS) and how do they affect renewable electricity generation. U.S. Energy Information Administration. Retrieved from

http://www.eia.gov/energy_in_brief/article/renewable_portfolio_standards.cfm.

¹⁰ Chite, Ralph M. 14 June, 2013. The 2013 Farm Bill: A Comparison of the Senate-Passed Bill (S. 954) and HouseReported Bill (H.R. 1947) with Current Law (p14-14). Congressional Research Service. Retrieved from <http://www.fas.org/sgp/crs/misc/R43076.pdf>.

world's oil². A 10% blending of fuels in transportation vehicles saves Americans a great deal of money. It is well known that the many of the major oil producing nations such as those in the Middle East, South America, and Africa have some direct or indirect form of political strife and economic unrest. This unrest has led to strained relations with the United States. Coupled with the shifting global market and external forces such as the OPEC cartel, these factors all lead to the volatility of oil prices. As a result, the United States now imports oil from nations that we have friendlier relations with such as Canada, and additionally we have upped our production capacity in this country. We are the third leading producer of crude oil behind Saudi Arabia and Russia, climbing from 6.5 million barrels/day in 2008 to 9 million barrels/day in 2012¹. The increase in U.S. oil output has very little to do with the decrease in the prices we pay at the pump. The fact of the matter is that the value of oil is never going to stop increasing. The International Energy Agency (IEA) has reported in its annual energy report that from the year 2011, when oil had the price of \$125/barrel, oil will increase to over \$215/barrel (adjusting for inflation) by 2035¹¹. The DOE has reported that oil prices are more likely to increase over time relative to the cost of producing ethanol. Crude oil only consists of 72% of the price of gasoline¹². The remaining percentages depend on refinery/chemical costs, distribution costs, corporate profits, and the federal taxes levied against these companies. Based on all of the things considered above, it is hopefully clear to see that while the Renewable Fuels Standard has had a positive impact on gas prices, there are many other factors that do much more to negatively affect the way crude oil, gasoline, and diesel prices are set.

6. Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded? If so, how? If not, why not?

Thus far, the RFS has served to diversify the use of transportation fuels by using first generation and advanced biofuels. This however, has done very little in enforcing the technologies and markets that could benefit from the uses of these fuels. A recent supplement in the Washington Post on the Brazil's Ethanol Summit shows Brazil's adoption of Flex Fuel Vehicles (FFV) since 2003. The first commercial FFV was introduced to consumers in Brazil in 2003, and in just ten years, the percentage of light duty flex-fuel vehicles (LDFFV) on the road in Brazil is 67%¹³, while the total percentage of LDFFV sales in Brazil is at 90%¹³. The U.S. produces the same ethanol commodity that Brazil produces, although domestically, and has not aggressively pushed Flex Fuel Vehicles the way that Brazil has. Again, by leaning more on a

¹¹ 12 November 2012. North America leads shift in global energy balance, IEA says in latest World Energy Outlook. International Energy Agency. Retrieved from <http://www.iea.org/newsroomandevents/pressreleases/2012/november/name,33015,en.html>.

¹² Koch, Wendy. 2012 April. U.S. Oil Production is up, So why are gas prices so High? *USA Today*. Retrieved from <http://usatoday30.usatoday.com/money/industries/energy/story/2012-04-21/global-factors-gasoline-prices/54421804/1>.

¹³ Included in 7 June 2013 Edition. Ethanol Summit 2013. *The Washington Post*. Retrieved from <http://www.ethanolsummit.com.br/noticias-conteudo.php?id=84&idioma=2>.

domestic commodity such as ethanol, cellulosic biofuels, or other advanced biofuels, we can effectively take our energy future into our own hands. If we are to continue producing oil at the current clip, expand natural gas to the heavy-duty fleet, and modify the RFS to include higher blends of ethanol such as E30, we can achieve this independence as we bring other renewable projects up to speed. By expanding to high octane E30, we are removing particulate matter, air toxics, and black carbon by 45-75%¹⁴. There is already a market for E30, as automakers are looking to include higher-octane E30 blends for powering high-compression engines. The RFS can be expanded to require the introduction of Flex Fuel Vehicles, and E30 market fuel by the end of this decade. Additionally the RFS can move to establish quality specifications for gasoline blends eliminating the aromatic octane boosters that are major sources of particle-borne toxics.

The range of qualifying fuels should only be expanded if it were to somehow include the use of other renewable sources such as solar for powering Electric Vehicles. Ethanol from Natural Gas should not be considered as a qualifying fuel for the RFS because although the end product is ethanol that can be blended into gasoline, the starting product is a non-renewable source, circumventing the RFS and the Clean Air Act.

Bill Holmberg, A private citizen currently working for the American and Latin American Councils on Renewable Energy. He was an early pioneer in advancing ethanol and biodiesel as well as promoting remineralization and biochar to revitalize soils, and.

Manan Parikh is an intern with advanced studies in Science and Biochemistry, He worked extensively on this submittal.

June 21, 2013

Energy and Commerce Committee
Email: rfs@mail.house.gov

The Honorable Fred Upton
Chairman
Energy and Commerce Committee
United States House of Representatives
Washington, D.C. 20515

The Honorable Henry Waxman
Ranking Member
Energy and Commerce Committee
United States House of Representatives
Washington, D.C. 20515

Re: Responses to Questions for Stakeholder Comment on White Paper Series on Renewable Fuel Standard on Energy Policy

Dear Chairman Upton and Ranking Member Waxman:

The American Farm Bureau Federation (Farm Bureau) appreciates the opportunity to provide responses to stakeholder questions regarding the white paper series on the Renewable Fuels Standard and its impact on energy policy. The following are Farm Bureau's responses to the questions for stakeholder comment as stated in the white paper on June 7, 2013.

How vulnerable is the United States currently to major oil supply and price disruptions? In the context of rising domestic oil production and falling demand, how important is it to adopt new and strengthen existing policy measures to further reduce our dependence on oil?

The economic variables that cause supply and price movement swings to crude oil are numerous, highly unpredictable and include geopolitical events in which the United States is not involved nor over which we have any control. Consider 2011 when instability from the North Africa and Middle East regions caused prices to exceed \$110 per barrel or 2008 when the price of crude oil reached an historical high of nearly \$145 per barrel on July 1 only to crash to \$31 per barrel by the end of the year. This uncertainty within the crude oil market often leaves the consumer vulnerable to price shocks. And despite decades of investment in infrastructure ranging from distribution systems to the automobile fleet, there is still no true substitute for gasoline. Supply and price disruptions of crude oil tend to have consequences that impede economic growth as higher crude oil prices leave consumers paying more for items such as gasoline and diesel, in

turn reducing the amount they have available to spend on other economic goods. It also increases the cost of food since energy and transportation costs are significant factors in determining the price consumers pay for food.

Over the past six months, domestic and international crude oil prices have been well-above the five-year average of \$87 per barrel and \$97 per barrel, respectively. These higher-than-average crude oil prices have caused gasoline prices to hit record highs during the month of February and over last year's Labor Day weekend, and for the year ending 2012, gasoline expenditures as a percentage of before-tax household income were at levels not seen since the recession of 2008 and the recession years during the Iran Revolution in the late 1970s. Crude oil is a globally traded commodity and the consequences of higher global oil prices seem to follow a trend that has a significant impact on the U.S. economy.

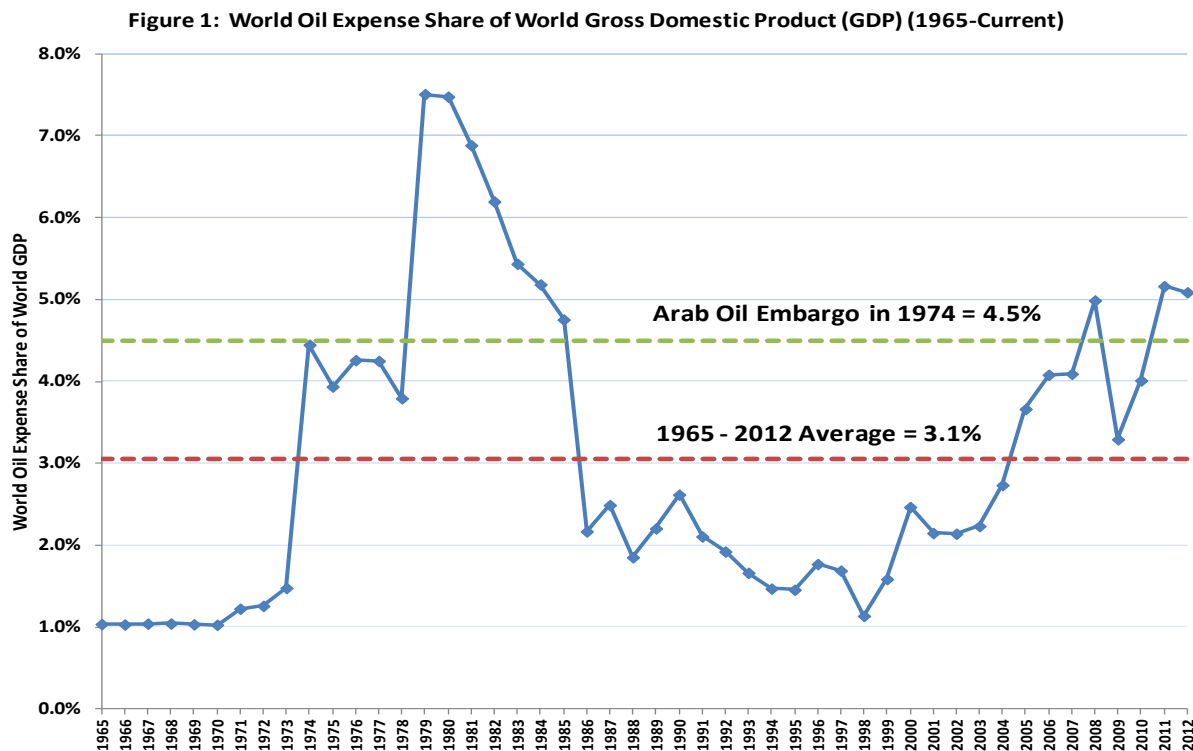
Since 1965, the share of world gross domestic product spent on oil averaged 3 percent. Following the same time period since 1965, this average has only exceeded or equaled 4.5 percent during four periods: 1974, 1979 through 1985, 2008 and 2011 through 2012. The first three periods all experienced something in common – significant global recessions and substantial oil price shocks that included crude oil at an higher than average level of total global economic output.

From 1973 to 1974, international oil prices increased substantially from \$3.29 per barrel to \$11.58 per barrel, a 252 percent increase. From 1973 to 1974, an Arab oil embargo resulting from the Israeli-Arab war disrupted oil flows, resulting in panicked buying and skyrocketing oil prices. Approximately five years later, the Iranian revolution began to cut-off of much of the country's oil, and international oil prices increased substantially from \$14.02 per barrel to \$31.61 per barrel, a 125 percent increase. In 2008, a housing crisis, speculative buying of new debt and a major increase in commodities brought about a recession – but not before global oil prices had peaked just below \$150 per barrel and consumers experienced a 34 percent increase from 2007 to 2008 in crude oil prices. These historic events were spontaneous occurrences that could not have been predicted or forecast, and each episode demonstrated how highly vulnerable we are to spikes in crude oil prices.

Clearly, instability in oil-producing regions leaves not only the U.S. economy, but the world economy susceptible to increased energy prices that result in depressed economic activity. Unrest in the Middle East region still exists and tensions remain high. It remains to be seen whether Iran will respond to international demands that it abandon its nuclear program. Historically the world's second-largest crude oil exporter to the global market place, Iran plays a tremendous role in the overall direction of crude oil prices, leaving some oil analysts to suggest that crude oil prices could shoot to \$180 per barrel domestically and \$200 per barrel internationally if the Iranian government closed the Strait of Hormuz. This alone and the

consistent threat of Middle East uncertainty leave the United States vulnerable to major price disruptions that threaten the overall economy.

It is important to remain highly cognizant of the impact crude oil price shocks have had on the U.S. economy and the global economy at large. The importance of developing a comprehensive, domestic energy source is a critical hedge to fend off large price increases and the Renewable Fuels Standard serves as a key component of this overall goal.



Source: BP, EIA and FRED data

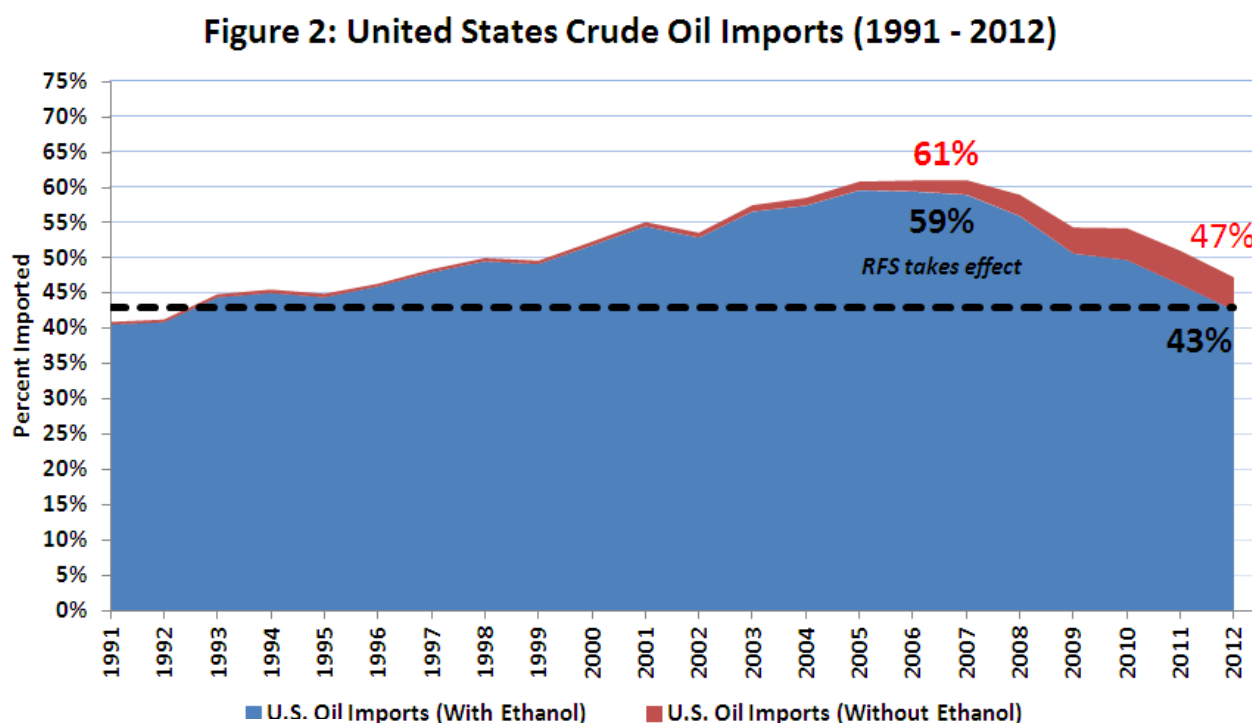
How has the RFS contributed to improved energy security? To what degree should the reduction in U.S. oil imports be attributed to the RFS?

The agricultural industry is energy-intensive and is sensitive to energy prices. Farmers and ranchers across the United States depend on energy-related products ranging from farm diesel to fertilizer in order to maximize production efficiencies that ultimately provide food, feed, fiber and fuel to the world, and is a major production cost for them. Making the United States more energy secure is very important to agriculture and the RFS plays a critical role this effort.

The extent of U.S. reliance on imported oil has often been raised as a matter of concern over the past 40 years. U.S. net imports of petroleum and other liquid fuels as a share of consumption have been one of the most watched indicators in national and global energy analyses. After rising steadily from 1950 to 1977, when it reached 47 percent by the most comprehensive measure,

U.S. net import dependence declined to 27 percent in 1985. Between 1985 and 2005, net imports of liquid fuels as a share of consumption again rose, reaching 60 percent in 2005. Since that time U.S. dependence on liquid fuels imports has decreased, with the net import share falling to an estimated 43 percent in 2012 [EIA estimates 41 percent for 2012], and with EIA projecting further significant declines in 2013 and 2014.

Over the past couple of years (2011 – 2012), U.S. oil imports fell below 50 percent of total use and are currently at 43 percent. The United States has not operated at this low of an imported oil share since 1992. Since the RFS took effect in 2007, crude oil imports have decreased 27 percent. The RFS is not the sole reason for the decrease in U.S. crude oil imports; but it is certainly a contributing factor. Figure 2 shows U.S. crude oil imports from 1991 through 2012 with the use of ethanol production and what U.S. oil imports would be without ethanol production.



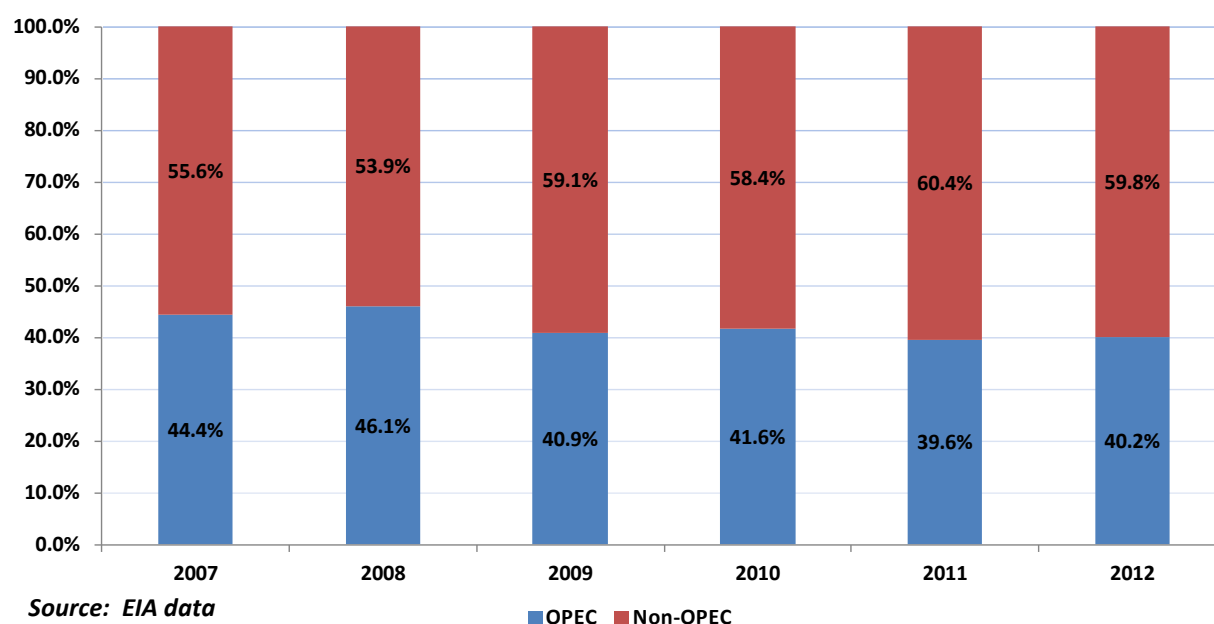
Source: BP and EIA data

More importantly, the origination of U.S. crude oil imports is moving away from OPEC member countries and shifting to Non-OPEC member countries. OPEC member countries are located in areas where instability is far more prevalent, making the United States more prone to sudden price shocks and/or supply disruptions.

U.S. crude oil imports from OPEC member countries are beginning to decline. When the RFS took effect in 2007, the United States imported over 44 percent of its crude oil from OPEC nations that included countries such as Saudi Arabia, Venezuela, Iraq and Nigeria. Since 2007,

the amount of crude oil imported from OPEC countries has declined while imports from Non-OPEC countries have increased. Even though six out of the top ten countries from which the U.S. imports crude oil are OPEC member nations, the total quantity of crude oil imported has not been this low since 1996. Even though the percentage of U.S. crude oil imports from OPEC member countries increased from 2011 to 2012, the total amount decreased due to the reduction in the total amount of crude oil imports. And as mentioned above, the ability of the RFS to diversify our transportation supply allows for the United States to become less dependent on foreign energy sources.

**Figure 3: U.S. Crude Oil Imports from OPEC & Non-OPEC affiliations
(2007 - 2012)**



The RFS is working and is integral to the country's national security and biofuels are essential in moving the U.S. away from expensive, foreign oil. In 2012, 13.3 billion gallons of ethanol were produced, displacing the need for approximately 465 million barrels of oil equivalent which would have likely been imported. Putting that in perspective, the displacement of 465 million barrels of oil equivalent, represents more than the United States imported from Mexico (377 million); Venezuela (348 million) and Iraq (173 million) in 2012 and would have been more than what the United States imported from Saudi Arabia in 2011 (436 million). Since 2000, domestic biofuels have helped reduce the need of oil imports from the Persian Gulf region by approximately 14 percent.

EIA forecasts that oil imports will further decline in the future. EIA projects that crude oil imports will decline to 34 percent by 2019, then slightly increase to 37 percent by 2040. In addition, renewables and biofuels are expected to increase their share in primary energy

consumption through 2040. Increased vehicle fuel economy is expected to off-set growth in transportation activity, resulting in a decline in the petroleum and other liquid share of fuel use even as consumption of liquid biofuels is expected to increase. The renewable share of total energy use, including biofuels, in the United States is expected to grow from 9 percent in 2011 to 13 percent in 2040 in response to the RFS. However, foreshadowing energy policy and its overall contribution to energy security is nearly impossible as many variables are in question. But from what is already known, the RFS is undoubtedly contributing to the energy security of the United States and will continue to do so in the future.

In the context of rising domestic oil production and falling demand, to what extent does the RFS currently contribute to U.S. energy security and to what extent will it further contribute going forward?

Please see question #2 above.

How do the costs and benefits of the RFS compare to those of other federal policies to diversify fuels used in the transportation sector, diversify transportation options, and reduce oil dependence through other means?

Farm Bureau believes that the benefits of the RFS outweigh the costs. In order for the schedule of the RFS to be achieved, different feedstocks other than corn starch ethanol must be used to reach the 36 billion gallons of renewable fuel required by 2022. The RFS is one of the most diversified energy policies and requires a multitude of different feedstocks that contributes to reducing our dependence on crude oil, which provide new diverse opportunities for private sector growth and investment.

The most important consideration of any policy should be the overall affect it has on the economy. The RFS has had positive benefits to the U.S. economy and research demonstrates that these positive benefits have the potential to add future growth to the U.S. economy. Researchers from the United States Department of Energy's (DOE) Oak Ridge National Laboratory concluded that the RFS has had a positive economic gain for the United States. The analysis indicated that the RFS will contribute and grow U.S. GDP by 0.8 percent by 2022, which according to the Congressional Budget Office's May 2013 baseline represents over \$198 billion in 2022. In addition, the study concluded that increased use of motor fuel ethanol will hold down fuel prices by 3 percent in 2015 and approximately 7 percent by 2022.

These positive gains to our economy from the RFS have also created good paying jobs within the United States. The Renewable Fuels Association (RFA), the trade organization representing the renewable fuels industry, indicates that in 2012, the production of 13.3 billion gallons of ethanol directly employed 87,292 Americans. An additional 295,969 Americans found work in positions indirectly affiliated with or dependent on ethanol production. Nevertheless, policies that benefit the overall economy should not necessarily be compared to one another, but should complement

each other based on the overarching goal – and in this case it's reducing our dependence on foreign oil by creating a positive economic benefit to the United States.

Another overarching benefit from the RFS to the U.S. economy is private sector growth and investment of new technologies. These new investments in infrastructure are becoming a reality due to the increasing requirement of advanced biofuels within the RFS that will create more jobs in the United States. The rapid rate of innovation and evolution within U.S. ethanol production is bringing new technologies to the market that will increase efficiencies, create new markets for energy crops and waste materials, and employ hundreds of thousands of Americans in innovative new careers, creating a wide range of biofuels using a wide range of sources.

For example, a 20 million-gallon-per-year cellulosic ethanol plant in North Carolina is currently being built and expected to be on-line by 2014. The plant's main feedstocks will be cellulosic materials such as miscanthus, switchgrass and wood scraps grown on approximately 30,000 acres of marginal land by farmers close to the refinery. In addition, the North Carolina pork producers are part of the blueprint in the overall project plan and the plan targets land used for spreading lagoon effluent. The energy grasses of switchgrass and miscanthus will be able to fully utilize the nitrogen and phosphorus derived from the manure and can help in producing good crop yields while helping with a farmers overall manure management system. More importantly, this project can serve as a different market for a valuable commodity which can serve as a potential, new revenue source for livestock producers. When fully operational in 2014, this facility is expected to create more than 300 jobs and USDA estimates that this project will help pork producers net \$4.5 million a year in increased revenue while continuing to help remove effluent from the state's pork industry.

In addition, the Abengoa Bioenergy cellulosic ethanol biorefinery under construction in Hugoson, Kan., will employ 300 people during construction and 65 full time employees once operational. The Guardian Lima, LLC ethanol biorefinery in Lima, Ohio, is now open for business and filled 33 full-time jobs in a small rural community. For a rural town, this means a great deal to the local economy. The United States is now seeing these investments begin production and providing further economic benefits to rural America, but also supporting an energy source that is not finite in nature.

Another benefit that makes the RFS unique compared to other federal policies is its ability to diversify fuels used in the transportation sector. The majority of refiners produce gasoline with an octane rating of 84 and then blends it with ethanol to boost it to the regular 87 octane that is sold at the gas station. Under current blending economics, upgrading sub-octane gasoline with ethanol reduces the refiner's cost of producing gasoline. At today's market prices, if refiners did not have access to ethanol, octane demand would have to be met with other higher-cost sources and this higher cost to the refiner would most likely be passed on to the consumer in the form of higher gasoline prices at the pump. The fact of the matter is that ethanol is currently used as the

cheapest oxygenate that has required very little need for adjusting the current infrastructure that is already in place.

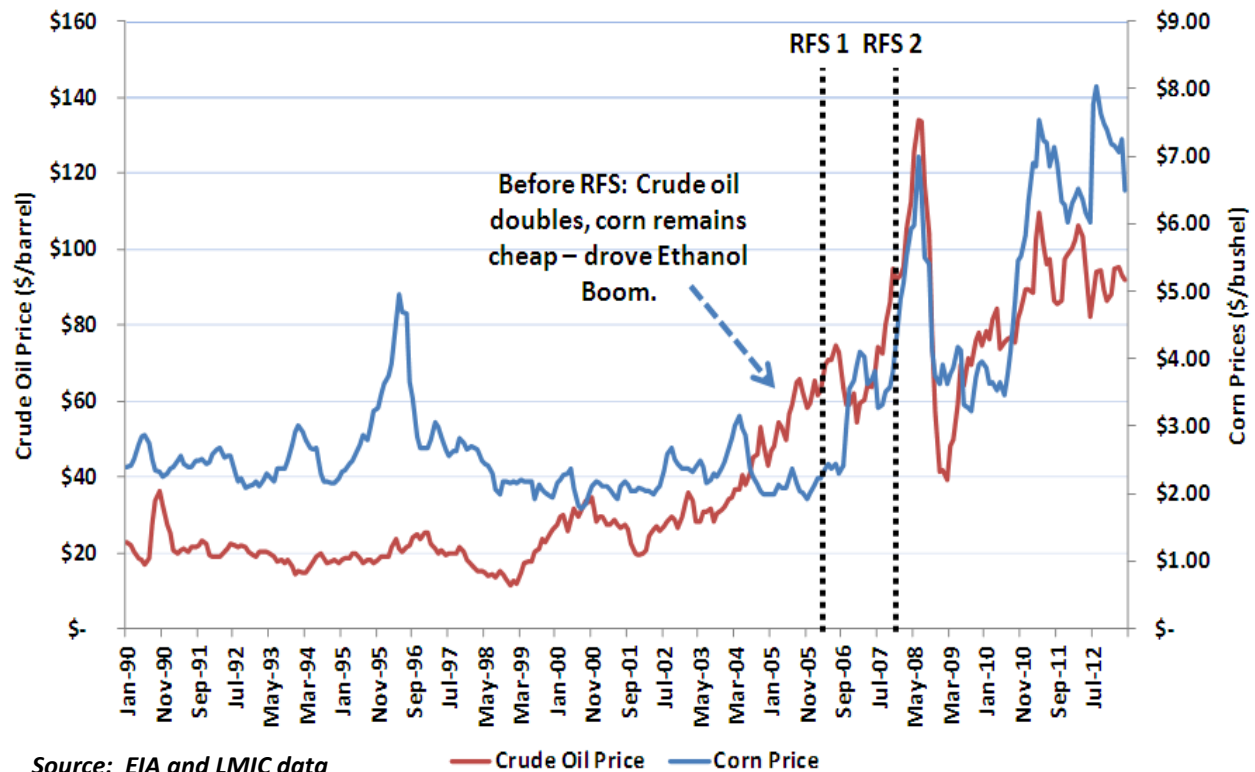
Furthermore, EPA has issued provisions allowing for the blending of up to 15 percent ethanol in gasoline, but only for vehicles produced after model year 2000. To date, there has been very little adoption of this product because gasoline stations are unwilling to put in pumps for this restricted market. However, globally, gasoline use in regular cars can go up to as high as E25 (75 percent gasoline, 25 percent ethanol) as seen in Brazil, which has seen widespread use of E25 since the late 1970s. Another option is E85. E85 has been in the market for some time with more than 8 million flex-fuel vehicles on U.S. roads today. More importantly, there is potential for flex-fuel vehicles to continue to penetrate the automobile fuel fleet as fuel and consumption capacity favor E85.

Another benefit of renewable fuel production is through biodiesel that can be produced in the U.S. and used in conventional diesel engines, directly substituting for or extending supplies of traditional petroleum diesel. Biodiesel has an excellent energy balance as it contains over three times the amount of energy it takes to produce it. This value includes energy used in diesel farm equipment and transportation equipment, such as trucks and locomotives; fossil fuels used to produce steam and electricity; and methanol used in the manufacturing process. Because biodiesel is an energy-efficient fuel, it can extend petroleum supplies.

What has been the impact of the RFS on oil prices? What has been the impact on gasoline and diesel fuel prices? What has been the impact on oil and fuel price volatility? How will these impacts change in the years ahead?

It is extremely important to emphasize that economics drove the ethanol boom even ahead of the first RFS program in 2005. During the 1980s and 1990s, crude oil prices were below \$30 per barrel and corn was generally below \$3 per bushel – very cheap compared to today's standards. Then came the terrorist attacks of 2001 along with military action in the Middle East and crude oil prices began to rise independently of corn. These events created a strong economic incentive to process corn into ethanol for fuel. By 2005, the price of crude oil doubled while the price of corn remained very cheap, a factor helping to drive the ethanol boom before the RFS program was even implemented. Figure 4 shows the monthly crude oil price versus the price of corn (nearby futures) from 1990 to today.

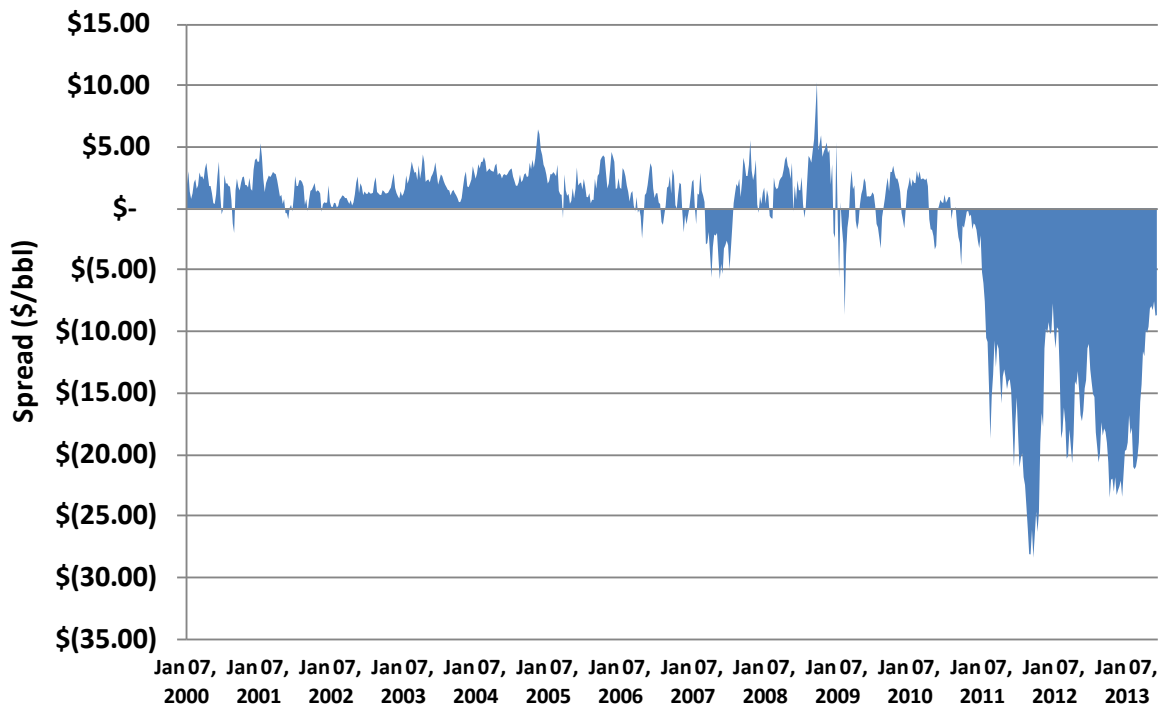
Figure 4: Monthly Corn vs. Crude Oil Price (1990 – 2013)



Essentially, the impact from the volatility of oil prices led to the creation of the ethanol boom which ultimately led to the creation of the RFS. The RFS alone has minimal direct impact on the price of crude oil, but the RFS allows for the opportunity to displace expensive crude oil that allows different fuel feedstocks to serve as a hedge against high crude oil prices and their by-products.

Another interesting case for ethanol's impact on crude oil has been its contribution to the spread between the two crude oil price benchmarks – the West Texas Intermediate (WTI) crude at Cushing, Okla. and the Brent crude from the North Sea traded in London. Historically, the WTI/Brent spread has been +/- \$3-\$5 per barrel, but due to its lower sulfur content and higher API gravity, WTI crude has historically traded at a slight premium to Brent Crude. However, over the past couple years, this trend has flip-flopped so that it is now common to see the Brent priced at a \$15 to \$20 per barrel or higher premium over that of WTI. For 2013, the spread has somewhat narrowed, but the WTI still holds a relatively large average discount to the Brent of \$14 per barrel for 2013. Figure 5 shows the weekly WTI crude oil spot premium/discount to Brent crude oil from 2000 to present.

**Figure 5: WTI Crude Oil Premium/Discount to Brent Crude Oil
(Weekly 2000 - 2012)**



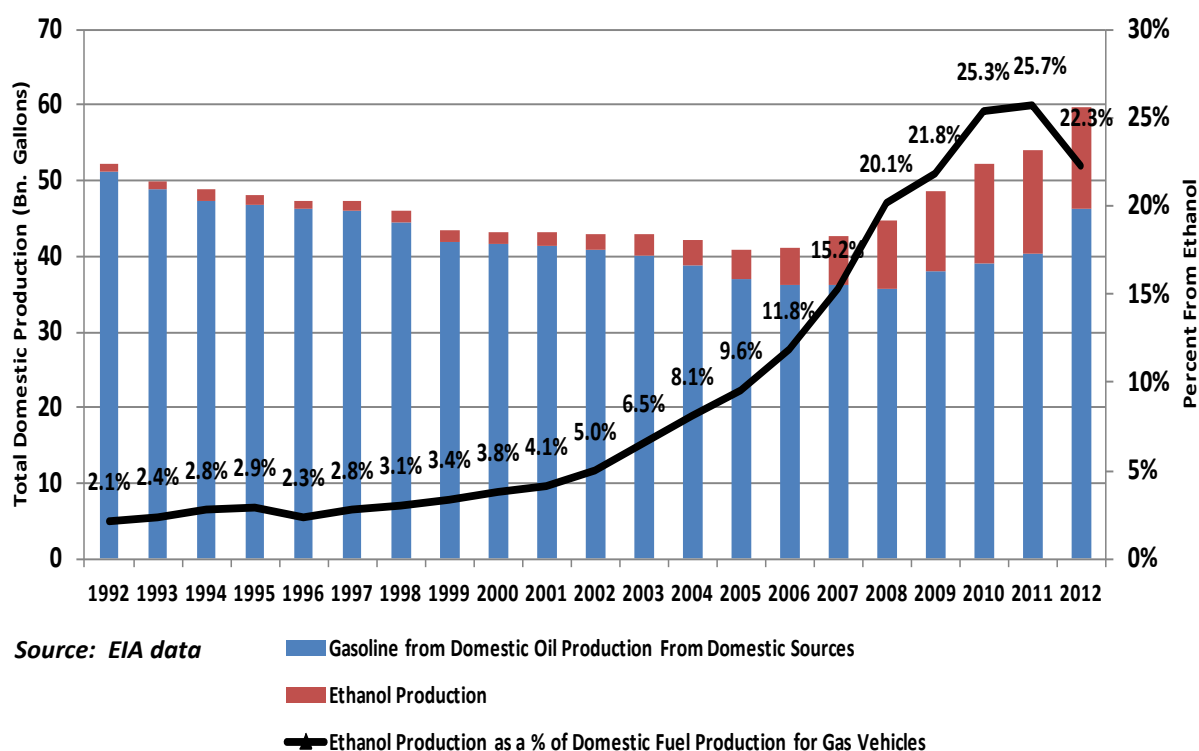
Source: EIA data

Nevertheless; the WTI/Brent spread has garnered a lot of attention. Prices have diverged as U.S. companies have struggled to move oil from North Dakota and Canada to refineries on the East and Gulf coasts. Because of this glut throughout the Midwest and at Cushing, Okla., the WTI oil grade is no longer the best indicator to guide global prices. It is expected that the spread will narrow with price support in favor of the WTI as the stockpile glut through the Midwest is expected to ease in the short to medium term. However, with ethanol production significantly increasing over the past five years, it seems hard to ignore that ethanol is at least playing a part in helping suppress the price of WTI crude oil. Ethanol is responsible for approximately 10 percent of our domestic fuel supply and even though domestic crude oil production has hit an all-time high, the increased production of ethanol is allowing for less reliance of crude oil in our transportation system thus helping to create a glut in our pipeline system and suppressing the price of WTI crude oil.

This can be seen over the past couple decades as the share of ethanol is representing a larger share of our supply in domestically sourced motor fuels. U.S. field production of crude oil was approximately 2.38 billion barrels in 2013 while ethanol production averaged 868 million barrels. That means that one out of every 2.7 barrels of U.S. produced liquid fuels was ethanol in 2012. Taking this a step further, if one 42 gallon barrel of crude oil equates to 19.5 gallons of gasoline, our domestic oil supply yielded 46.4 billion gallons of gasoline. With 13.3 billion

gallons of ethanol produced in 2012, ethanol accounted for over 22 percent of the fuel for gasoline vehicles from domestic sources. Since the RFS2 was enacted in 2007, the United States has seen ethanol as a percent of domestic fuel production increase from over 15 percent to over 25 percent as seen in 2011. More noticeably, as Figure 6 illustrates over the last 20 years, the United States has seen ethanol as a percent of domestic fuel production increase from 2 percent in 1992 to now over 22 percent in 2012. There is little question that ethanol is now a substantial component of the U.S. fuel mix and its ability to extend oil supplies is clearly affecting crude oil prices.

**Figure 6: Total Fuel From Domestic Sources in Gasoline Vehicles
(1992 - 2012)**



Moreover, since 2009, ethanol has been trading at a discount to gasoline. Ethanol is currently selling \$0.40 per gallon less than a gallon of Reformulated Blendstock for Oxygenate Blending (RBOB) gasoline. This price spread essentially means that a gallon of E10 (gasoline containing 10 percent ethanol) is \$0.04 per gallon cheaper than a gallon of conventional gasoline with no ethanol. As indicated in the above section, refiners often produce gasoline with an octane rating of 84 and then blend with ethanol to boost it to the regular 87 octane that is sold at the gas station. At today's market prices, if refiners did not have access to ethanol, octane demand

would have to be met with other higher-cost sources and this higher cost to the refiner would most likely be passed on to the consumer in the form of higher gasoline prices at the pump.

Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded? If so, how? If not, why not?

Farm Bureau believes that the current RFS is working and is helping the United States become more energy independent through diversification of our feedstocks. Farm Bureau supports a comprehensive energy policy that will help reduce the nation's dependence of foreign energy sources, to stimulate energy production within the agricultural sector and to assure that farmers and ranchers have access to affordable energy. With this background, further development and use of renewable energy sources such as ethanol, biodiesel and biomass are critical to our nation's energy future and will help further strengthen the overall national security of the United States.

It is clear that challenges lie ahead in the development of new renewable fuels. It is also clear that the use of renewable fuels is enhancing our energy security by reducing our dependence on foreign oil. Farm Bureau supports and defends the standards and incentives necessary to further develop the U.S. renewable fuels industry. We would like to thank you for giving us the opportunity to comment on this extremely important issue as producing and accomplishing a domestic, comprehensive energy source is a priority issue for us.

Sincerely,

A handwritten signature in black ink, appearing to read 'Bob Stallman', with a long horizontal flourish extending to the right.

Bob Stallman

President

The American Gas Association is grateful for the opportunity to comment on the Committee's Renewable Fuel Standard (RFS) Assessment White Paper. Our comments will focus on the sixth question included at the conclusion of the white paper:

We believe that modifying the RFS to allow the inclusion of clean, domestically-produced, alternative fuels is necessary and appropriate. In other words, the RFS should be reformulated to become a Clean Alternative Fuel Standard.

Congress's original intention in creating the RFS in statute was twofold: to improve our national energy security by reducing our dependence on petroleum imported from volatile regions, and to improve our local and global environment. We suggest that, had the immensity of our domestic natural gas resources been known at the time of passage of the Energy Policy Act of 2007, Congress would have included measures to promote the greater use of natural gas as a transportation fuel. Reforming the RFS to include domestically produced natural gas as an eligible fuel is a necessary step toward realigning our energy policy with our national strengths.

The existing RFS standard includes life-cycle greenhouse gas emissions criteria for qualifying fuels. Other fuels, including compressed natural gas (CNG) and liquefied natural gas (LNG), reduce tailpipe emission of greenhouse gases by 20 to 30 percent, depending on the vehicle type. And when natural gas is used as a transportation fuel, it results in a nearly one-hundred percent displacement of petroleum.

Since the RFS was originally crafted in 2007, our nation has undergone a transformation in its energy landscape due to the development of shale gas resources. Estimates of U.S. shale gas resources have increased dramatically each year since 2007. The most recent estimate released by the Potential Gas Committee¹ indicates that the United States possesses a total technically recoverable resource base of 2,384 trillion cubic feet (Tcf) as of year-end 2012. Put in context, this means our domestic reserves constitute more than one hundred years supply at current rates of consumption.

Please let us know if the Committee requires further information about domestic natural gas resources, and the benefits of natural gas as a transportation fuel, as it contemplates revisions to the RFS.

The American Gas Association, founded in 1918, represents more than 200 local energy companies that deliver clean natural gas throughout the United States. There are more than 71 million residential, commercial and industrial natural gas customers in the U.S., of which 92 percent — more than 65 million customers — receive their gas from AGA members. Today, natural gas meets almost one-fourth of the United States' energy needs.

¹ The Potential Gas Committee an independent, nonprofit, tax-exempt entity in the State of Colorado, supported by the Colorado School of Mines.



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June 21, 2013

The Honorable Fred Upton
Chairman
Committee on Energy and Commerce
House of Representatives
2125 Rayburn House Office Building
Washington, DC 20515

The Honorable Henry Waxman
Ranking Member
Committee on Energy and Commerce
House of Representatives
2125 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Upton and Ranking Member Waxman,

API appreciates the opportunity to respond to your questions in the Committee on Energy and Commerce white paper examining the energy security impacts associated with the Renewable Fuel Standard (RFS).

For reasons explained below, the RFS has not delivered the energy security or other benefits envisioned by the Energy Independence and Security Act (EISA) of 2007. The RFS has not unfolded as expected, and we agree that several implementation challenges have emerged that received little if any consideration prior to passage of EISA. The life-cycle impacts of biofuels on air quality, water and land were not fully comprehended at the time when the law passed. There is insufficient supply of domestic advanced biofuels, including cellulosic, and the approaching blendwall could result in severe fuel supply disruptions in the U.S.¹ Meanwhile, the overall energy landscape has changed dramatically. Thanks to technology advances, our nation's energy security is enhanced significantly. According to EIA, U.S. crude and natural gas reserves in year 2022 are projected to be, respectively, 23% and 62% higher than what was projected in 2007. The House Energy and Commerce Committee's review is timely. Congress should repeal the RFS as it has become an infeasible mandate.

Please find below our responses to the questions for stakeholder input raised in the white paper:

- 1. How vulnerable is the United States currently to major oil supply and price disruptions? In the context of rising domestic oil production and falling demand, how important is it to adopt new and strengthen existing policy measures to further reduce our dependence on oil?**

¹ NERA Economic Consulting, "Economic Impacts Resulting from Implementation of RFS2 Program", October, 2012.

U.S. oil supply security has been steadily improving over the last several years. According to EIA, U.S. crude oil imports from countries outside North America (excluding Canada and Mexico), have declined from 6.9 million barrels per day in 2005 to 5.1 million barrels per day in 2012; a decline of over 25%. This trend is projected to continue. Historical evidence suggests that higher oil production capacity, either domestically or in other parts of the world, puts downward pressure on both crude oil prices and price volatility, and allows oil markets to better respond to unexpected supply and demand shocks.

It is crucial for the United States to continue to adopt policy measures that reduce its dependence on imported oil from volatile regions of the world. The three most effective measures in this regard would be approval of the Keystone XL pipeline, improving the permitting and regulatory environment for oil and natural gas currently being developed on federal lands and waters, and for the U.S. government to allow greater access to federal areas that are currently off-limits to exploration and development. The Keystone XL pipeline would allow the transport of over 830 thousand barrels per day of Canadian crude oil upon full phase-in from our friendly neighbor to the north. If federal permitting and regulations were more efficient, similar production gains currently being realized on nonfederal land could possibly be achieved on federal lands and waters. According to the Congressional Research Service, crude oil production from non-federal lands increased 35% from FY2007 to FY2012 while at the same time crude production from federal lands and waters was essentially unchanged.² Finally, according to Wood Mackenzie, allowing oil and natural gas development in the eastern GOM, the Atlantic, the Pacific, parts of the Rockies and parts of Alaska could increase U.S. oil and natural gas production by over 10 million barrels of oil equivalent per day by 2030.³

Significant energy security benefits of improving the efficiency of federal permitting and regulations and approving the Keystone pipeline would begin to be realized in the near term and energy security benefits associated with access to federal lands currently off limits would commence within a 5 to 7 year period. These three policy measures, if enacted, would produce enormous energy security benefits for the United States and arguably represent some of the most cost effective ways to strengthen U.S. energy security.

2. How has the RFS contributed to improved energy security? To what degree should the reduction in U.S. oil imports be attributed to the RFS?

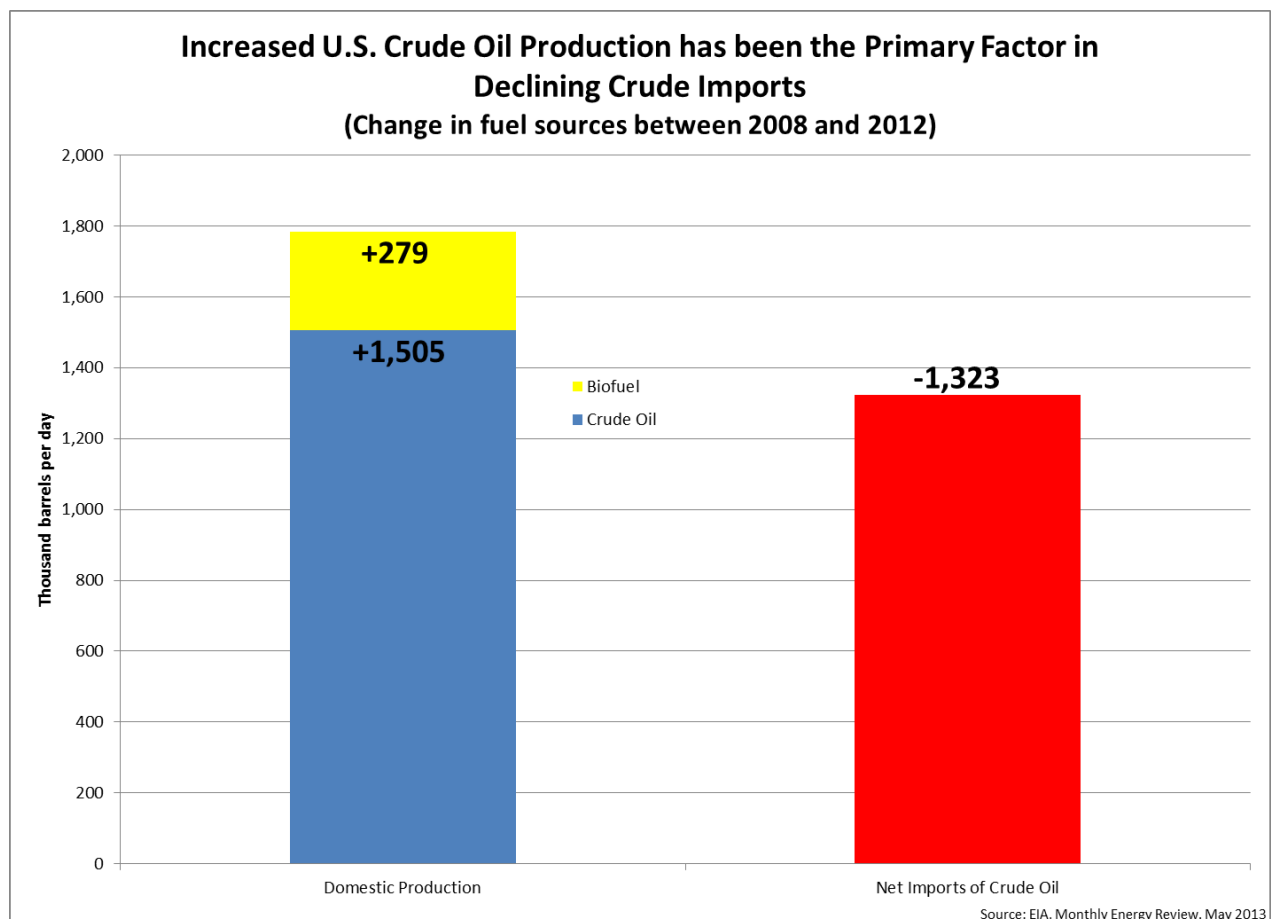
Responses to Questions 2 and 3 have been combined following Question 3.

3. In the context of rising domestic oil production and falling demand, to what extent does the RFS currently contribute to energy security and to what extent will it further contribute going forward?

² Wood Mackenzie, "U.S. Supply Forecast and Potential Jobs and Economic Impacts (2012-2030)," September 7, 2011 Available at: http://www.scribd.com/doc/63727337/U-S-Supply-Forecast-and-Potential-Jobs-and-Economic-Impacts-2012-%E2%80%93-2030?access_key=key-1fvm6u4lgsz0ibozrto8

³ Congressional Research Service, "U.S. Crude Oil and Natural Gas Production in Federal and Non-Federal Areas," March 7, 2013 Available at: <http://energycommerce.house.gov/sites/republicans.energycommerce.house.gov/files/20130228CRSreport.pdf>

Over the past 5 years, U.S. net imports of crude oil have fallen sharply, primarily as a result of increased domestic crude oil production. More specifically, between 2008 and 2012 (start of the RFS2 to current) domestic production of crude oil has increased by more than 1.5 million barrels per day.⁴ Net imports of crude oil over the same period have fallen by more than 1.3 million barrels per day.⁵ As shown in the figure below, the decrease in net imports of crude oil has mirrored the increase in domestic crude oil production. By way of contrast, the RFS has provided only marginal, if any, contribution to declining crude imports and energy security. The economic downturn and increased energy efficiency also played roles in the decline of crude imports though consumption of crude oil has returned to pre-recession levels.



With respect to displacement of petroleum products, it is important to understand that most alternative fuels mandated by the RFS do little to diversify the set of transportation fuels in the market. Their impacts are limited, comprising roughly 7% of the motor gasoline market and 1.5% of the of the diesel (ULSD) market (adjusted for energy equivalence) in 2012. E85 has been an insignificant factor altogether, comprising only 0.03% of total gasoline consumption in 2012 due primarily to low consumer acceptance. Finally, it should be noted that since the U.S.

⁴ U.S. EIA Monthly Energy Review May 2013.

⁵ U.S. EIA Monthly Energy Review May 2013.

has become a net exporter of finished gasoline and ULSD, there is a diminished potential for the RFS to displace finished imported products. While the U.S. currently imports unfinished petroleum blendstocks, these typically originate from stable European countries and hence pose no security threat.

Going forward, increasing domestic production of crude oil will continue to increase U.S. energy security; the RFS, however, will likely have little, if any, positive impact. The RFS will likely continue to have little, if any, impact on the importation of finished petroleum products, as the EIA projects the U.S. to continue to be a net exporter of petroleum products (which includes finished motor gasoline and ULSD). EIA's estimate of the highest level of annual ethanol consumption (in 2020), is the equivalent of just 8.7% of total motor gasoline consumption projected for that year.⁶ Similarly, EIA's estimate of the peak level of biodiesel demand (reached in 2015) is the equivalent of 2.3% of total ULSD consumption projected for that year.⁷ The future, as projected by EIA, remains consistent with the current reality -- the RFS has not been and will not be a meaningful contributor to energy security.

In fact, the impact of the RFS on energy security is likely to turn negative, if it hasn't already. This is due to inefficient and costly fuel shuffling of ethanol. The U.S. imports ethanol from Brazil (over 403 million gallons in 2012) and exports domestically produced ethanol to other countries, driven entirely by the RFS. Sugarcane ethanol imported from Brazil qualifies as advanced biofuel, and is required in increasing amounts to meet the RFS. Corn ethanol will soon reach its effective cap within the RFS. The RFS requires increasing amounts of sugarcane ethanol to meet the advanced biofuel mandate, leading to increased dependence on Brazil to meet the RFS, potentially decreasing energy security in the future. Additionally, the impending blendwall, created by the RFS, has the potential to create new energy security problems. As noted by NERA, consequences of the blendwall may be rationing of fuel supplies because refiners and importers are forced to reduce fuel imports and increase fuel exports to remain in compliance. The constriction of fuel supply in the market place could result in severe negative impacts across the economy.

4. How do the costs and benefits of the RFS compare to those of other federal policies to diversify fuels used in the transportation sector, diversify transportation options, and reduce oil dependence through other means?

The RFS is a costly federal policy that is imposing net costs on society, not benefits. It has not lead in any meaningful way to diversification of the transportation fuels market as explained below. Furthermore, according to a study by NERA Economic Consulting⁸, the gasoline pool will soon reach (or has already reached) the ethanol blendwall where no further ethanol can be blended above 10% by volume. This fact, in conjunction with the ever increasing mandated volumes dictated by the RFS, is projected to lead to a breakdown in the motor fuel markets and impose significant wide-spread economic harm to the wider U.S. economy, according to NERA. The RFS program has outlived its useful purpose, particularly in the face of rising domestic oil

⁶ U.S. EIA, Annual Energy Outlook 2013, May 2013.

⁷ U.S. EIA, Annual Energy Outlook 2013, May 2013.

⁸ NERA Economic Consulting (October, 2012): "*Economic Impacts Resulting from Implementation of the RFS2 Program*" <http://www.api.org/news-and-media/news/newsitems/2013/march-2013/nera-study-concludes-rfs-program-is-broken-and-a-threat-to-consumers>

and natural gas production and declining U.S. demand for gasoline, and it needs to be scrapped. NERA concluded that by 2015, the cost of gasoline could increase by 30% and the cost of diesel could rise to a level that would cause wide spread economic harm resulting in a reduction of \$2,700 in annual average household income and a \$770 billion contraction of GDP. These costs are driven by the unworkable RFS mandate volume requirements that exceed the transportation fuel markets absorption capacity.

The RFS has not achieved significant diversification in the transportation sector. The renewable fuels produced for compliance with the RFS do not function as standalone fuels. Lack of diversification is signified by the current mix of feedstocks and biofuels production. The majority of renewable fuels (ethanol and biomass-based diesel) in the U.S. is produced with conventional feed stocks of corn and soybeans and is blended with petroleum fuels. Simply put feedstock diversification (i.e. switchgrass, algae, forest waste) and drop-in fuels have not developed. The technology forcing aspirations of the RFS have failed to develop economically competitive and commercially available volumes of alternative transportation fuels. Even though the U.S. EPA has taken action to reduce cellulosic ethanol volumes mandated in the RFS, earlier this year a U.S. Court of Appeals admonished EPA for requiring an unreasonably high volume of cellulosic biofuel be used – even though commercial production has been non-existent and the Agency subsequently reset the volume to 0 gallons for the 2012 compliance year. Additionally, EIA has lowered its forecast for cellulosic ethanol production for the foreseeable future, reflecting the inability of the RFS to drive commercial production. In fact, a barrel of oil is far more versatile, providing energy for power plants, heavy machinery and aviation and maritime transportation as well as petrochemicals for the development of other products.

Currently, there are no other federal policies in place analogous to the RFS that attempt to increase the production (and consumption) of bio and alternative fuels⁹. Some have advocated the imposition of a national low carbon fuel standard (LCFS). The state of California has enacted a LCFS in an attempt to reduce CO₂ emissions by 10% by limiting the carbon intensity (CI) of transportation fuels. In an analysis of the LCFS, the Boston Consulting Group¹⁰ (BCG) concluded that reaching the 10% goal was “virtually impossible with current fuel technologies” and challenges confront implementation. The BCG study concluded that full implementation of the LCFS depends on likely “infeasible” assumptions and could negatively impact California’s economy. Science Applications International Corporation (SAIC) conducted a study¹¹ of a proposed LCFS for the 11 states in the Northeast and Mid-Atlantic. In the study’s timeframe, it was concluded that a 10% CI reduction was not possible, while sustaining full energy needs, and there would be negative impacts on the economy.

In a study by CRA¹² to assess potential economic impacts of a nation-wide LCFS, it concluded that fuels and vehicles would become more expensive, transportation costs would increase and higher costs would reduce consumption, employment, investment, and economic output. By 2025, CRA estimated 2.3 to 4.5 million job losses and a GDP decline of \$410 to \$750 billion.

⁹ Note: CAFE regulations will improve fuel efficiency and reduce GHG emissions for 2017-2025 model year vehicles. The U.S. DOE in recent years has guaranteed over \$1 billion in loans for biofuels and auto technology/manufacturing.

¹⁰ http://www.cafueelfacts.com/wp-content/uploads/2012/07/BCG_report.pdf

¹¹ http://www.secureourfuels.org/wp-content/uploads/2012/03/FINALCEA_LCFS_REPORT-MASTER_DRAFT_DOCUMENT_3-23-2012.pdf

¹² Charles River Associates (June 2010): *Economic and Energy Impacts Resulting from a National Low Carbon Fuel Standard*. <http://consumerenergyalliance.org/wp-content/uploads/2010/06/CRA-LCFS-Final-Report-June-14-2010.pdf>

According to the CRA study, an important conclusion was that a nation-wide LCFS would cause a price shock that will dramatically increase the cost of transportation fuel within 5 years of implementation. A study by Barr¹³ concluded that implementation of a LCFS in the U.S. would result in increased GHG emissions as a result of crude “shuffling” that shifts imports and exports of crude oil. According to the crude shuffling analysis in the Barr report, crude transportation distances nearly triple and related GHG emissions nearly double.

Both the RFS and LCFS represent policies that pick “winners and losers” and are impractical and ineffective ways to diversify fuel use in the transportation sector. In addition, the end results of both a RFS and a LCFS are similar in that both are likely to impose large costs on the transportation sector with adverse ripple effects throughout the entire economy.

Biofuel and alternative fuels are valued components of the motor fuels markets and will continue to be used in the absence of outdated and harmful mandates such as the RFS. However, federal consumption mandates contained within the RFS are unworkable and could cause damage to the economy. Furthermore, the National Academy of Science¹⁴ concluded that consumption mandates in the RFS would increase the price of transportation fuels if the price of renewable fuel exceeded gasoline (see retail fuel price chart below).

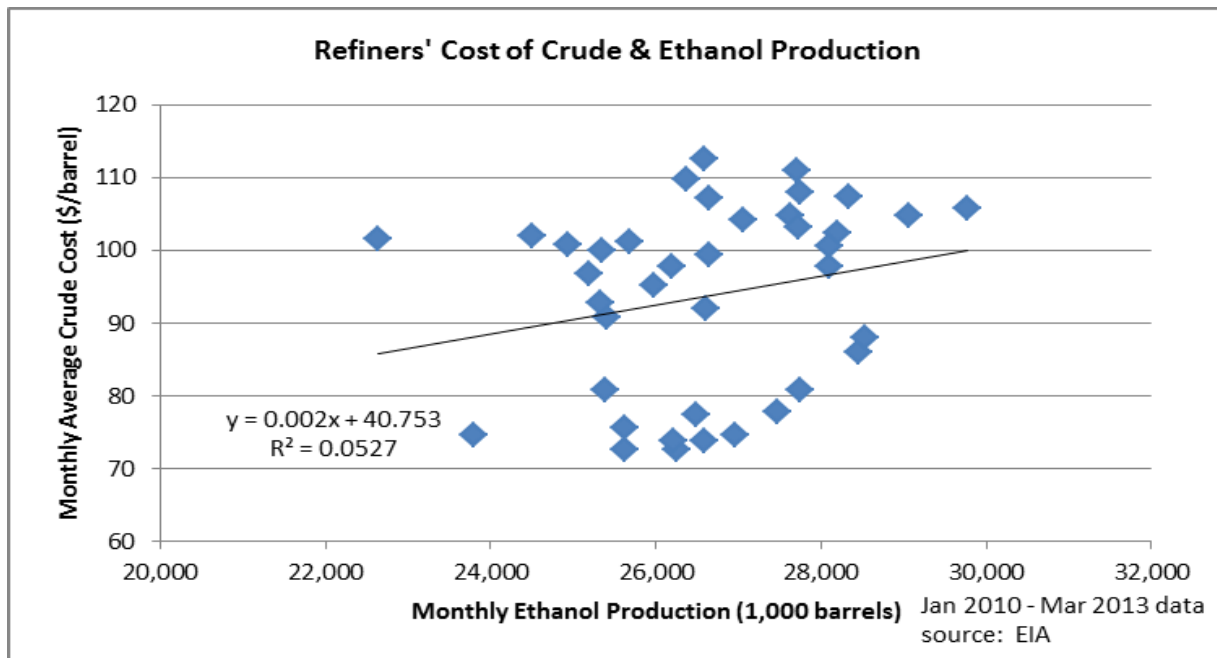
5. What has been the impact of the RFS on oil prices? What has been the impact on gasoline and diesel fuel prices? What has been the impact on oil and fuel price volatility? How will these impacts change in the years ahead?

The RFS, while mandating consumption of biofuels in the U.S., has had little if any impact on crude oil prices. The overall energy content of mandated biofuel volumes as a percentage of total liquid transportation fuel remains relatively small, at around 5% or less. Crude oil is traded on a global market and the energy content of mandated biofuel consumption in the U.S. is too small to have any impact on global crude markets. According to a study by Knittel and Smith¹⁵ (MIT study), ethanol production has a “minimal” impact on crude oil prices. The figure below illustrates that during the period January, 2010 to March, 2013, there was very little correlation between monthly ethanol production and U.S. refiners’ acquisition cost of crude.

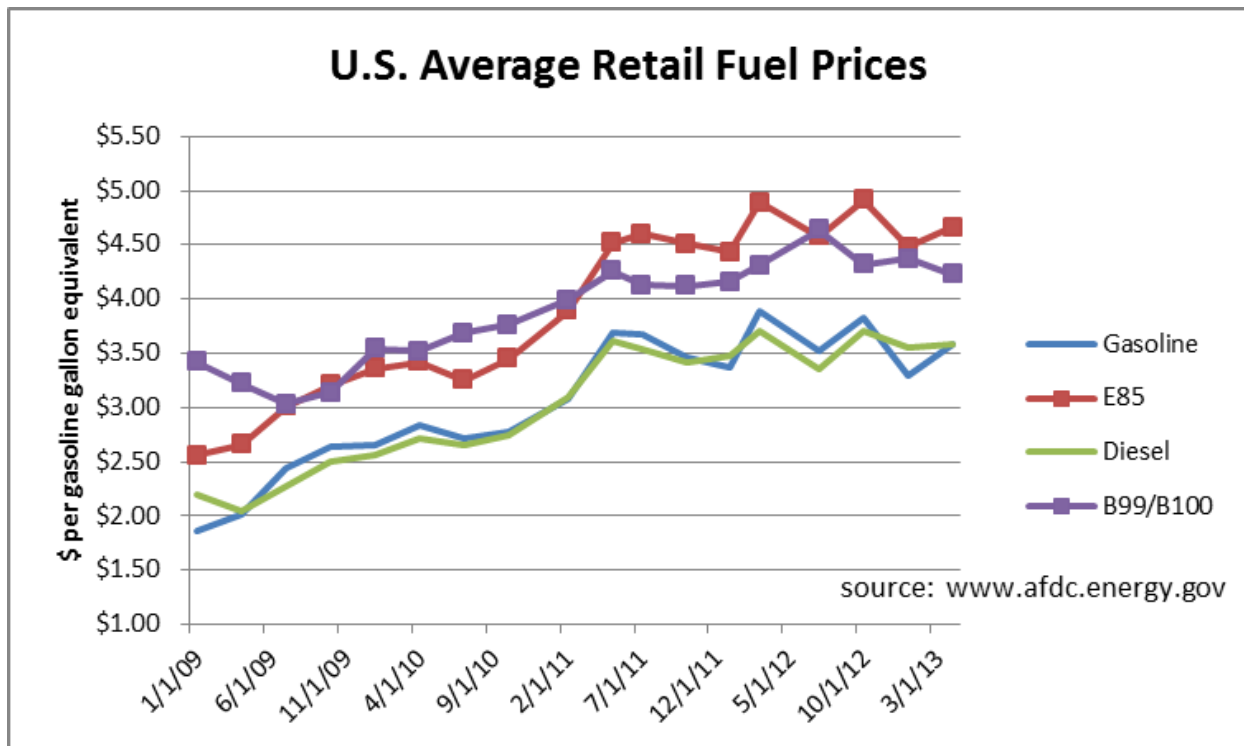
¹³ http://www.secureourfuels.org/wp-content/uploads/2011/04/Crude_Shuffle_Report_0616101.pdf

¹⁴ National Academy of Science, Renewable Fuel Standard: Potential Economic and Environmental Effects of U.S. Biofuel Policy, 2011.

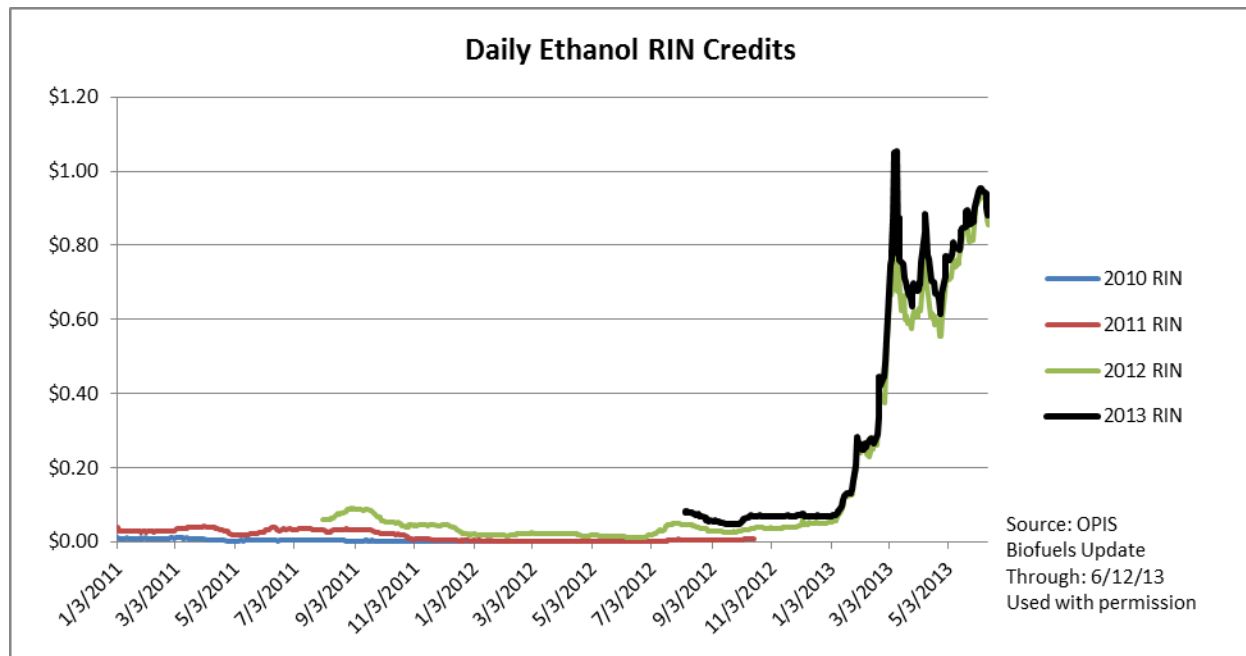
¹⁵ Knittel, C. and A. Smith (2012): “*Ethanol Production and Gasoline Prices: A Spurious Correlation*,” MIT Center for Energy and Environmental Policy Research. <http://web.mit.edu/ceepr/www/publications/workingpapers/2012-006.pdf>



With respect to the impact of the RFS on product prices, an analysis of historical energy equivalence data illustrates that on average the cost of renewable fuels exceeds petroleum gasoline and diesel. The following chart illustrates that average retail prices for E85 and B99/B100 exceeded the retail prices of gasoline and diesel, on a gasoline gallon equivalent (GGE). As mandates force the blending of renewables into petroleum fuels, the higher cost renewables put upward pressure on blended fuels.



Another negative impact of the RFS on refined products is the impact of the RFS compliance mechanism. Obligated parties demonstrate compliance with the RFS by submitting biofuel Renewable Identification Numbers (RINs) to the EPA. The value of RINs, as reported by OPIS, has increased significantly in recent months and likely corresponding to arriving at the E10 blendwall. The acquisition of RINs for compliance represents an added cost to manufacturing gasoline and diesel.



The NERA study concluded that the RFS, in its current form, will reach a point where biofuels cannot be incorporated into transportation fuels at the volumes necessary to meet annual RIN obligations. Effectively, a shortage of RINs will develop. Refiners and importers can only supply as much gasoline and diesel for U.S. consumption as they have RINs to cover the obligation that supplying such a fuel incurs. Thus the result of the blend-wall will be to limit supplies of transportation fuel for U.S. consumption. The behavior of the current market for RINs is indicating that this may now be starting to happen. Should this trend continue, as projected by NERA, this could eventually lead to domestic fuel supply reductions and increased volatility in refined product markets. By 2015, NERA estimates that gasoline costs could increase 30% and diesel costs could reach a point where significant harm is incurred by the U.S. economy. The RFS was instigated in a very different environment of declining U.S. crude production and rising crude imports that no longer exist. It has outlived its usefulness, and should be repealed so as to avert its large impending costs.

6. Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded? If so, how? If not, why not?

The best option for improving energy security is to repeal the Renewable Fuel Standard. The purported energy security benefits of the program are not valid. The RFS has no definition or metrics of what biofuels provide energy security benefits. Changing the range of qualifying biofuels does not change the marginal contribution biofuels have made to enhanced energy security.

The goal of energy security is to reduce volatility in the energy markets that expose the U.S. to economic damage from supply inadequacy, and the potential for such damage to compromise

the independence of U.S. foreign policy. The Renewable Fuels Standard has had no measurable success in achieving this goal to date. As we reach the 10% ethanol blendwall, the RFS changes from having a marginal energy security impact to a severely negative impact. As the NERA report shows, the RFS places an artificial limit the volume of petroleum fuels that can be supplied to the domestic market, which can only harm our energy and economic security. As explained above, the NERA report shows that RFS implementation beyond the blendwall forces refiners and importers to reduce domestic supply of transportation fuels, resulting fuel cost increases, and fuel rationing, ultimately resulting in severe economic harm. Congress should allow markets, not mandates, to pick winners and losers. Repealing the RFS, as well as increasing domestic access to oil and natural gas, and approving the Keystone XL pipeline, are key steps Congress should take to ensure our nation's energy, and economic security.

As previously stated, the RFS contains unfulfilled aspirational goals and numerous unintended environmental consequences and other adverse impacts. Again, we appreciate the opportunity to provide these responses. If you have any questions, please don't hesitate to contact us.

Sincerely,

A handwritten signature in black ink, reading "Robert L. Greco" followed by a stylized monogram.

Bob Greco

Group Director: Downstream and Industry Operations

API is a national trade association that represents all segments of America's technology-driven oil and natural gas industry. Its more than 500 members – including large integrated companies, exploration and production, refining, marketing, pipeline, and marine businesses, and service and supply firms – provide most of the nation's energy. The industry also supports 9.2 million U.S. jobs and 7.7 percent of the U.S. economy, delivers \$86 million a day in revenue to our government, and, since 2000, has invested over \$2 trillion in U.S. capital projects to advance all forms of energy, including alternatives.



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United States House of Representatives
Committee on Energy and Commerce
Chairman Fred Upton
2125 Rayburn House Office Building
Washington, DC 20515

June 19, 2013

Dear Chairman Upton and the Committee on Energy and Commerce,

I am director of the Arkansas Grocers and Retail Merchants Association, which represents hundreds of grocery and retail business owners and operators, both large and small, and from all parts of the state. We wanted to reach out as small business owners to remind you, as you consider a path forward with the Renewable Fuel Standard (RFS), how interconnected we all are when it comes to US energy policy. We have seen the unintended consequences stemming from well-intended but poorly written laws and standards, including high fuel and food prices.

It is of the utmost importance to the small business and retail community that we develop a balanced, comprehensive domestic energy policy that reduces our dependence on foreign oil while lowering fuel prices, creating jobs and growing the U.S. alternative fuel industry. As it's currently written, the Renewable Fuel Standard works against that mission, because it relies too heavily on one source for alternative fuel - corn. We in the business community believe a responsible solution would be to take advantage of new fuel technologies that can be activated and scaled right now, while also harnessing some of our most abundant natural resources.

A technology that has the ability to scale up quickly and relieve the pressure on corn is ethanol made from natural gas. With natural gas so abundant across the U.S., producing conventional ethanol out of this clean and inexpensive natural resource would bring robust new growth to the alternative fuel industry and stimulate local economies. It could also lower the cost of transportation fuel that blends ethanol. But as it's currently written, the RFS short-sightedly excludes natural gas from being used to make ethanol.

We support legislation like the Domestic Alternative Fuels Act, a bipartisan bill that proposes expanding the RFS to include natural gas. With this simple, reasonable revision to the RFS, job-seekers, the business community and local economies would reap enormous benefits.

We urge you to consider revisions like this in your review.

Sincerely,

Polly Rand Martin, President
Arkansas Grocers and Retail Merchants Association

June 21, 2013

The Honorable Fred Upton
Chairman
Energy and Commerce Committee
U.S. House of Representatives
2125 Rayburn House Office Building
Washington, DC 20515

The Honorable Henry A. Waxman
Ranking Member
Energy and Commerce Committee
U.S. House of Representatives
2322A Rayburn House Office Building
Washington, DC 20515

via email at: rfs@mail.house.gov

Dear Chairman Upton and Ranking Member Waxman:

The Biotechnology Industry Organization (BIO) is pleased to comment on the U.S. House of Representatives Committee on Energy and Commerce's (Committee) fourth Renewable Fuel Standard (RFS) assessment white paper¹ reviewing the RFS's Energy Policy implications.

Introduction:

BIO is the world's largest biotechnology organization, with more than 1,100 member companies worldwide. BIO represents leading technology companies in the production of conventional and advanced biofuels and other sustainable solutions to improving energy security and reducing U.S. dependence on oil imports. BIO also represents the leaders in developing new technologies for food, feed, fiber, and fuel.

These companies are developing new and innovative ways to help fuel America, reducing oil imports and contributing to U.S. energy security by providing affordable domestically produced alternatives to oil through environmentally friendly energy crops, cleaner-burning biofuels and renewable chemicals that help reduce greenhouse gas emissions and provide more sustainable sources of energy and materials. Further, the technology being developed by these companies, in large part due to the regulatory and financial certainty provided by the RFS, is helping the U.S. economy by mitigating the

¹ U.S. House of Representatives Energy and Commerce Committee. 7 June 2013. *RENEWABLE FUEL STANDARD ASSESSMENT WHITE PAPER: Energy Policy*
<http://energycommerce.house.gov/sites/republicans.energycommerce.house.gov/files/analysis/20130607RFSWhitePaper4.pdf>

impact high and volatile global oil prices have on all facets of the economy and reducing gas prices at the pump for American consumers.

Given BIO's broad and diverse set of member companies involved in energy production, we are able to provide a unique perspective on the issues the Committee is seeking to address regarding RFS impacts on Energy Policy.

As discussed in our responses to the Committee's first two white papers,^{2,3} the RFS has been a success in driving the commercialization of technologies that help to reduce the U.S. transportation system's overwhelming reliance on foreign petroleum. The RFS provides exactly the type of long-term regulatory stability needed to send a signal to investors to develop a domestic biofuels industry that lessens our dependence on foreign fuels and creates jobs in America, using homegrown technology.

Congress established the RFS to encourage the use of existing biofuels and the development of advanced biofuels in order to reduce our reliance on the rising cost and price volatility of oil. It is crucial we maintain the RFS in order to spur alternative energy production and mitigate the impacts of overreliance on oil.

White Paper Response:

The Committee has again requested comments on a list of questions in this white paper. In order to properly address each question, this paper has each question italicized and listed below. BIO's response will directly follow each question.

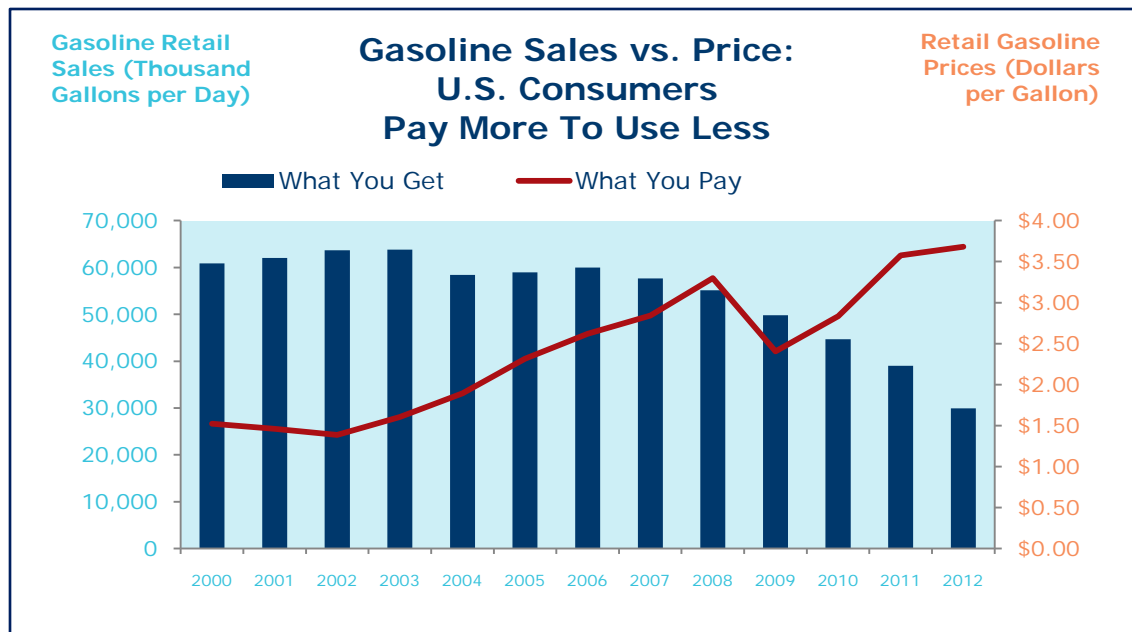
Energy and Commerce Committee, RENEWABLE FUEL STANDARD ASSESSMENT WHITE PAPER, Energy Policy, Questions for Stakeholder Comment

² Biotechnology Industry Organization. 5 Apr. 2013. *BIO Comments on U.S. House of Representatives Committee on Energy and Commerce's White Paper Reviewing the Renewable Fuel Standard (RFS)*. <http://www.bio.org/advocacy/letters/bio-comments-us-house-representatives-committee-energy-and-commerces-white-paper-re>

³ Biotechnology Industry Organization. 29 Apr. 2013. *BIO Comments on U.S. House of Representatives Committee on Energy and Commerce's White Paper Reviewing the Renewable Fuel Standard's (RFS) Agricultural Sector Impacts*. <http://www.bio.org/advocacy/letters/bio-comments-us-house-representatives-committee-energy-and-commerces-white-paper--0>

1. How vulnerable is the United States currently to major oil supply and price disruptions? In the context of rising domestic oil production and falling demand, how important is it to adopt new and strengthen existing policy measures to further reduce our dependence on oil?

As the Committee recognizes in its own White Paper, despite the continued projected growth in oil production in the United States, oil is traded on a global market and prices will still be affected by international events.⁴ As long as oil is tied to the global market, U.S. production will not be enough to offset shocks in the global market, leaving the American consumers, economy, and national security vulnerable to any rise in oil prices.



In 2012, despite increased domestic oil production⁵ and declining gasoline use, the average U.S. household spent \$257 more to fuel the family car than the previous year. That same year, the 3.3 percent increase in gasoline prices outpaced the 2.9 percent average growth in American's incomes for 2012.⁶

These increases in fuel prices – despite a decrease in demand and an increase in production – has a crippling effect on the economy, stalling economic growth as America continues to recover from its economic recession. The 30 percent increase in the price of oil from October 2011 through April 2012 adversely affected household budgets and likely contributed to a slow rate of increase in consumer spending.⁷ In 2011, according to Dean Maki, chief United States economist at Barclays Capital, a \$10 increase in the price of oil shaves about two-tenths of a percentage point off America's

⁴ U.S. House of Representative's Energy and Commerce Committee, *RENEWABLE FUEL STANDARD ASSESSMENT WHITE PAPER: Energy Policy*, June 7, 2013, p. 3 at <http://energycommerce.house.gov/sites/republicans.energycommerce.house.gov/files/analysis/20130607RFSWhitePaper4.pdf>

⁵ U.S. Energy Information Administration, *U.S. Field Production of Crude Oil*, at <http://www.eia.gov/dnav/pet/hist/leafhandler.ashx?n=p&s=mcrfpus1&f=m>

⁶ U.S. Energy Information Administration, *U.S. household expenditures for gasoline account for nearly 4% of pretax income*, February 4, 2013, at <http://www.eia.gov/todayinenergy/detail.cfm?id=9831>

⁷ U.S. Energy Information Administration, *Petroleum; Weekly Spot Price*, July 2012, at <http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=P&s=RCLC1&f=D>

growth rate and raises unemployment by one-tenth of a percentage point.⁸ While another study showed 10 of the 11 U.S. recessions since World War I have been preceded by significant oil price spikes.⁹

In addition to hurting consumers at the pump and harming the economy, the continued volatility in the oil markets undermines military readiness, putting our national security at risk. In 2012, 28 decorated military officers and over 300 veterans called on the President and Congress to support efforts by the U.S. military to reduce its dependence on petroleum-based fuel, due to the impact its overreliance has on the military's financial, operational, and strategic missions.¹⁰ According to information compiled by the American Security Project, the Department of Defense (DoD) consumed 117 million barrels of oil at a cost of \$17 billion in Fiscal Year 2011. This was a 381 percent cost increase from 2005, when military spending on fuel was \$4.5 billion – despite military fuel consumption declining by 4 percent from 2005 to 2011. Because of the cost surge caused by oil prices, DoD estimates that every 25 cent increase in the price of a gallon of petroleum-based fuel costs the military \$1 billion in additional fuel costs. This extreme price volatility of oil makes it very difficult for military planners to deal with budget shortfalls and creates strategic risks with the U.S. military needing to defend shipping lanes around the world to ensure the free flow of oil, which some estimates show to come to an additional \$83 billion in military costs per year.¹¹

However, the RFS2 policy is working to curtail the impact the price of oil has on the pump and the U.S. economy, reducing dependence on foreign oil as intended by Congress. The RFS2 has encouraged the commercialization of technologies helping to reduce the United States' overwhelming dependence on foreign oil. By providing long-term regulatory stability needed to send a signal to investors, the RFS2 has further developed the domestic biofuels industry, lessening our dependence on foreign fuels and creating jobs in America, using homegrown technology.

Continued support of the RFS2 will secure the foundation for further reducing imported petroleum and encouraging the development and expansion of our nation's renewable fuels sector.

2. How has the RFS contributed to improved energy security? To what degree should the reduction in U.S. oil imports be attributed to the RFS?

The RFS has contributed to improved energy security. Ethanol and biodiesel already represent 10 percent of the nation's motor fuel supply. This means motor fuel that would have been made from oil, most likely from foreign sources, is now being produced in the U.S. at facilities typically in rural areas, providing high-skilled jobs and keeping revenues in the country. As noted by the U.S. Energy Information Administration (EIA), U.S dependence on imported oil has declined since peaking in

⁸ New York Times, *Rising Oil Prices Pose new threat to U.S. Economy*, February 24, 2011, at http://www.nytimes.com/2011/02/25/business/economy/25econ.html?_r=0

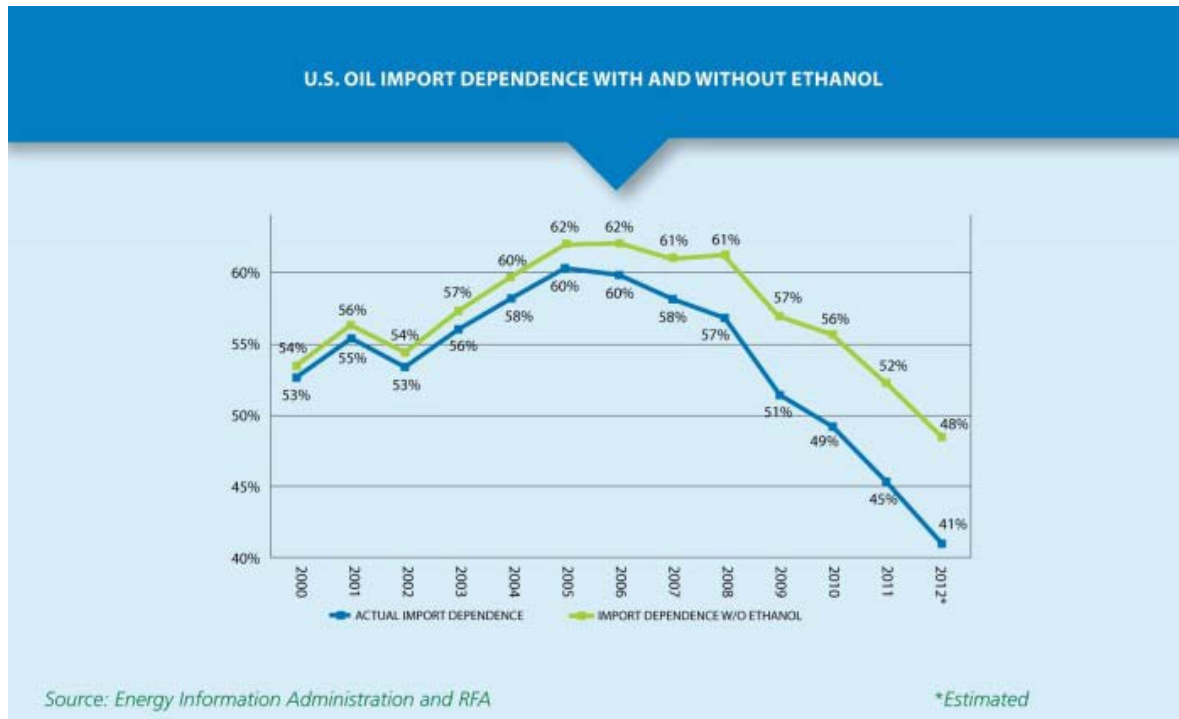
⁹ Resources for the Future, *Reassessing the Oil Security Premium*, Stephen P.A. Bran and Hillard G. Huntington, February 2010, at <http://www.rff.org/RFF/Documents/RFF-DP-10-05.pdf>

¹⁰ American Security Project, *Military Leaders Call for Support of DoD's Alternative Fuels Program*, July 24, 2012, at <http://americansecurityproject.org/blog/2012/military-leaders-call-for-support-of-dods-alternative-fuels-program/>

¹¹ American Security Project, *DoD's Biofuels Program*, January 2013, at <http://americansecurityproject.org/ASP%20Reports/Ref%200109%20-%20Factsheet-%20DoD%E2%80%99s%20Biofuels%20Program.pdf>

2005, in part because of the increased use of biofuels¹² as mandated by the first RFS passed in 2005's Energy Policy Act (P.L. 109-58).

Since 2000, increased use of biofuels has reduced dependence on foreign oil by 25 percent. While the decline in oil imports from 60 percent to 41 percent can be partially attributed to increased domestic production and more efficient vehicles, without ethanol, import dependence would have been 48 percent.¹³



3. In the context of rising domestic oil production and falling demand, to what extent does the RFS currently contribute to U.S. energy security and to what extent will it further contribute going forward?

Without the RFS, U.S. dependence on imported oil would be higher, despite increases in domestic oil production and falling demand. While there is much discussion of energy independence in "North America," since we get much of our imported oil from Canada, we continue to send more than \$1.3 billion outside our borders every day for oil. Every barrel of oil we import, even from our neighbors to the north, adds to our growing deficit and to our energy insecurity.

The problem is that we are overly reliant on oil as the sole source of our transportation fuel. Consumers are captive to rapid spikes in prices at the pump when an oil refinery shuts down for any reason, whether a natural disaster or a planned retooling – as

¹² Energy Information Administration, *How dependent are we on foreign oil*, at http://www.eia.gov/energy_in_brief/article/foreign_oil_dependence.cfm

¹³ Renewable Fuels Association, *Ethanol Facts: Energy Security*, at <http://www.ethanolrfa.org/pages/ethanol-facts-energy-security>

occurred recently in Minnesota just ahead of the Memorial Day weekend.¹⁴ To be able to control prices at the pump and balance our trade deficits, we must continue to build a domestic biofuel industry and make changes to our fuel supply infrastructure to enable greater use and flexibility in fuel supplies.

As discussed in questions 1 and 2, the RFS means 10 percent of the motor-vehicle fuel supply comes from domestic biofuels and a continued decrease in imports. Looking ahead, the growth in the biofuels sector will be able to offset even greater amounts of oil, which coupled with greater domestic oil production will put an even greater dent in oil imports.

4. How do the costs and benefits of the RFS compare to those of other federal policies to diversify fuels used in the transportation sector, diversify transportation options, and reduce oil dependence through other means?

Since 2000, the RFS2 has helped reduce dependence on foreign oil by 25 percent.¹⁵ In 2011, biofuels produced and consumed in the U.S. reduced oil imports by more than 200 million barrels, keeping \$22 billion here in the U.S.¹⁶ Biofuels and new renewable technologies being spurred by the RFS are providing solutions to our energy challenges. This saves the average American about \$1200 a year in fuel costs because ethanol is a cheaper blending alternative than other petroleum-based products. As has been demonstrated in a number of academic and independent research studies, biofuels reduce the overall price of gasoline and save American consumers money at the pump.^{17,18}

The RFS is also working to boost the U.S. and world economy. According to researchers at the DOE's Oak Ridge National Laboratory, the RFS is producing positive economic effects for the U.S. and the benefits will increase by 2022 when the RFS reaches its goal of 36 billion gallons of renewable fuel. According to the study, the RFS will contribute a 0.8 percent increase to the gross domestic product by 2022 and 0.21 percent worldwide. The study went on to note, "although production costs of advanced biofuels are higher than for conventional biofuels in our model, their economic benefits result from reductions in oil use and their smaller impacts on food markets compared with conventional biofuels. **Thus, the US advanced biofuels targets are expected to have positive net economic benefits** (emphasis added)."¹⁹

Additionally, there are regulatory measures available to the U.S. Environmental Protection Agency (EPA) that can help meet the corporate average fuel economy

¹⁴ Gary Strauss, "Refinery woes cause nationwide gas price spike," Detroit Free Press, May 17, 2013. <http://www.freep.com/article/20130517/BUSINESS07/305170039/Refinery-woes-cause-nationwide-gas-price-spike>.

¹⁵ Renewable Fuels Association.

¹⁶ Global economic effects of US biofuel policy and the potential contribution from advanced biofuels, at <http://www.future-science.com/doi/abs/10.4155/bfs.12.60>

¹⁷ Impact of Ethanol Production on the U.S. and Regional Gasoline Markets: An Update to 2012, at <http://www.card.iastate.edu/publications/synopsis.aspx?id=1166>

¹⁸ The Impact of Ethanol Production on the U.S. Gasoline Market, at http://www.ethanol.org/pdf/contentmgmt/The_Impact_of_Ethanol_Production_on_the_US_Gasoline_Market.pdf

¹⁹ Biofuels, Global economic effect of US biofuel policy and the potential contribution from advanced biofuels, November 2012, Vol. 3, No. 6, Pages 703-723, at <http://www.future-science.com/doi/abs/10.4155/bfs.12.60>

(CAFE) standards and greenhouse gas (GHG) emission standards along with the RFS's goal of increasing biofuels and reducing our dependency on foreign oil, without having to alter the RFS legislatively.

Many cars on the road today run best on higher octane premium and mid-grade fuel blends, as recommended in their owners' manuals. Ethanol and other advanced biofuels have higher octane ratings than gasoline, which enables higher compression and more efficient combustion engines.²⁰ Developing higher octane fuels will become increasingly important as higher corporate average fuel economy (CAFE) standards come into effect in tandem with new clean air standards. By 2025, U.S. cars and light duty trucks must achieve average fuel economy of just less than 50 miles per gallon, an increase from 30 miles per gallon in the current model year.²¹ A 2009 report by Sandia National Laboratories indicated that automakers could boost fuel economy in future car models by developing smaller engines with higher compression and turbo charging that take advantage of higher octane fuels including fuels with more biofuel content.²²

At the same time, the EPA has proposed new and more stringent limits on auto tailpipe and evaporative emissions of nitrogen oxides and other particulate matter and sulfur content in fuel by 2025. These proposed Tier III limits would improve air quality for many Americans and save at least \$8 billion in annual healthcare costs associated with asthma and other respiratory ailments by 2030.²³ The EPA's proposed Tier III rules recognize that automakers can make use of higher blends of biofuels in gasoline to achieve both increased fuel economy and clean air goals.

The military is also developing policy options to reduce its dependence on foreign oil. Recognizing the significant national security threat from over-reliance on foreign oil – a fact noted in the 2010 Quadrennial Defense Review²⁴ – the Department of Defense is seeking greater authority under the Defense Production Act (DPA) to develop the use of drop-in biofuels. As recognized in the Memorandum of Understanding (MOU) between the Department of the Navy, the Department of Energy, and the Department of Agriculture, *"a robust advanced drop-in biofuels market is an essential element of our national energy security [and] is essential to sustain the U.S. military's mission capabilities, which are at risk due to potential disruptions of crude oil supplies."*²⁵ This effort extends beyond the Navy. Every branch of the military has begun a program to certify the use of "drop-in" biofuels for existing equipment. The Air Force, for example, is pursuing and advocating for alternative fuels because of the obvious operational and economic benefits they promise. The Air Force has set a goal to use alternative aviation fuels for 50 percent of its domestic aviation needs by 2016.²⁶

²⁰ Formula 1 and Indy Cars use 100 percent ethanol while NASCAR uses E15 gasoline

²¹ Environmental Protection Agency, *Fuel Economy* homepage, at <http://www.epa.gov/fueleconomy/index.htm>

²² Next Generation Biofuels and Advanced Engines for Tomorrow's Transportation Needs. November 17 and 18, 2009, San Ramon, CA. <http://digitalcommons.unl.edu/usdoepub/82/>

²³ Environmental Protection Agency, Control of Air Pollution from Motor Vehicles: Tier 3 Motor Vehicle Emission and Fuel Standards, 78 Fed. Reg. 29,816 (proposed May 21, 2013) (to be codified at 40 CFR Pts. 79, 80, 85, 86, 600, 1036, 1037, 1065 and 1066), available at <https://www.federalregister.gov/articles/2013/05/21/2013-08500/control-of-air-pollution-from-motor-vehicles-tier-3-motor-vehicle-emission-and-fuel-standards>) [Hereinafter "The Proposed Rule"].

²⁴ Department of Defense, *Quadrennial Defense Review Report*, February 2010, at http://www.defense.gov/ODR/images/ODR_as_of_12Feb10_1000.pdf

²⁵ Memorandum of Understanding between The Department of the Navy, The Department of Energy, and The Department of Agriculture, Page 2, June 28, 2011, at <http://www.rurdev.usda.gov/SupportDocuments/DPASignedMOUEnergyNavyUSDA.pdf>

²⁶ Department of Defense, *Quadrennial Defense Review Report*, page 87, February 2010, at http://www.defense.gov/ODR/images/ODR_as_of_12Feb10_1000.pdf

While there is substantial private investment in the development of the advanced biofuels industry, federal support pursuant to the MOU would significantly accelerate the production of the fuel volumes necessary to meet the energy security needs of the U.S. military. The project would also provide the necessary validation of emerging technologies to unlock private investment in future advanced biofuels production for military and civilian markets.

Continued support of the RFS along with other regulatory programs will help diversify the fuel supply while reducing foreign oil dependence, further reducing vulnerability to major oil supply and price disruptions.

5. What has been the impact of the RFS on oil prices? What has been the impact on gasoline and diesel fuel prices? What has been the impact on oil and fuel price volatility? How will these impacts change in the years ahead?

Biofuels reduce the cost of gasoline and save American consumers money at the pump. According to Iowa State University's Center for Agricultural and Rural Development, over the period of January 2000 to December 2011, biofuel production reduced wholesale gasoline prices by 29 cents. In 2011, with increasing biofuel production, gasoline prices were reduced by \$1.09 per gallon.²⁷

Looking ahead, according to a study from researchers at the DOE's Oak Ridge National Laboratory, the RFS is helping to hold down motor fuel prices. The study found that increased use of biofuels will reduce motor fuel prices by 3 percent in 2015 and approximately 7 percent in 2022.²⁸

6. Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded? If so, how? If not, why not?

The most important thing Congress can do to enhance energy security is to leave the RFS in place. The RFS is unquestionably the strongest policy enacted by Congress to enhance our energy security. By setting specific goals over a long-term period, offering significant flexibility for compliance that recognizes uncertainty, the RFS serves as a model for how federal policy can enhance energy security. We are only one-third of the way through the RFS timeline; now is not the time to change course.

To extend the RFS' benefits of energy security, Congress can help industry work towards removing restrictive barriers – many put in place by obligated parties – to entry of additional biofuels into the market place to further reduce dependence on foreign oil.

Despite claims by the oil industry, the biofuels industry is making real strides in bringing additional biofuels to commercial readiness. According to a recent report by

²⁷ Iowa State University Center for Agricultural and Rural Development, *Impact of Ethanol Production on the U.S. and Regional Gasoline Markets: An Update to 2012*, Xiaodon Du and Dermot Hayes, at <http://www.card.iastate.edu/publications/synopsis.aspx?id=1166>

²⁸ ScienceDaily, *Biofuels Can Provide Viable, Sustainable Solution to Reducing Petroleum Dependence*, Study Shows, February 11, 2009, at <http://www.sciencedaily.com/releases/2009/02/090210133920.htm>

Bloomberg New Energy Finance, producers are confident that these new renewable fuels will out-compete oil on cost, if given a fair chance.²⁹

To further these efforts, EPA should expedite approval of feedstocks and technology pathways for RFS eligibility. While EPA has made great efforts in recent months to get more of these feedstocks approved³⁰, dozens of pathway assessments are still pending.³¹ Industry is working with EPA in a constructive manner to help get more qualifying feedstocks and technology pathways for advanced and cellulosic biofuels approved.

Approval of these pathways does not require legislative altering of the RFS, but would offer a significant increase in the number of qualifying fuels. This would help obligated parties meet their obligations under the RFS, increase domestic production of biofuels; and reduce further demand for imports.

Once a robust domestic advanced biofuels is established, Congress should reassess the policy to ensure promising feedstocks and fuel pathways – such as cellulosic biofuels from sustainably harvested forest biomass - are not unnecessarily restricted from eligibility. But there is broad agreement that establishment of a robust U.S. advanced biofuels industry requires policy stability, and demands that Congress leave the RFS intact in the interim.

Conclusion:

The RFS has been a success for America's energy policy. The RFS has developed a renewable fuel industry that has created domestic fuels and industrial jobs throughout the country. It has helped consumers by reducing the cost of gasoline at the pump and lessening the shock to the economy due to spikes in oil prices. The RFS has improved America's energy security by displacing 10 percent of the motor vehicle fuel that would be filled by foreign oil, and by driving development of the potential to displace up to 25 percent of fuel when the Standard is fully realized.

While the increase in domestic production of oil and gas has played a role in the reduction of foreign oil imports, oil will always be tied to a global market, and U.S. production will not be enough to offset shocks in the global market, leaving the American

²⁹ Bloomberg New Energy Finance, *Cellulosic Ethanol Heads For Cost-Competitiveness by 2016*, March 12, 2013, at <http://about.bnef.com/press-releases/cellulosic-ethanol-heads-for-cost-competitiveness-by-2016/>

³⁰ Environmental Protection Agency, *Renewable Fuels: Regulations & Standards*, at <http://www.epa.gov/otaq/fuels/renewablefuels/regulations.htm>

³¹ Environmental Protection Agency, *Guidance on New Fuel Pathway Approval Process*, at <http://www.epa.gov/otaq/fuels/renewablefuels/compliancehelp/rfs2-lca-pathways.htm>

consumers, economy, and national security vulnerable to any rise in oil prices.

Improvements in automobile efficiencies will also continue to play a role in reducing oil imports. To achieve efficiency goals, automobile manufacturers will need higher blends of biofuels in the fuel supply that enable higher compression and more efficient combustion engines.

For the RFS to continue to succeed in advancing America's energy policy goals, it is best for the policy makers to let the law continue to function as intended. To achieve even greater energy security, there are other policy tools that can be used to help lessen our reliance on imported oil. These include the military's efforts to diversify its fuel supply and encouraging the EPA to expedite approval of qualifying feedstocks and technology pathways for advanced and cellulosic biofuels under the RFS.

In conclusion, we hope the Committee will recognize the valuable contribution the RFS has made to U.S. energy policy and energy security. Altering or repealing the RFS will undo the gains made in reducing our dependence on foreign oil and leave the country more vulnerable to future energy shocks due to the volatility in the oil market. Thank you for your consideration of our comments.

Sincerely,

Brent Erickson
Executive Vice President
Industrial and Environmental Section
Biotechnology Industry Organization



222 West Las Colinas Blvd.
Suite 900N
Irving, TX 75039

June 21, 2013

Celanese Corporation (Celanese) appreciates the House Energy & Commerce (E&C) Committee for its in-depth review of the Renewable Fuel Standard (RFS). Celanese is a global technology and specialty materials company that engineers and manufactures a wide variety of products essential to everyday living. As a recognized product and process technology innovator, we help to create applications that meet the needs of our customers worldwide. Based in Dallas, Texas and with an employee base of approximately 7,600 worldwide, we serve our customers through operations located primarily in North America, Europe and Asia with 27 production facilities and an additional 9 strategic affiliate production facilities. Our net sales totaled \$6.4 billion in 2012.

As a specialty materials company, Celanese is not a traditional participant in the RFS and, under the current framework of the program, that continues to be true. However, chemistry is creating solutions that empower countries to improve energy efficiency and develop new energy solutions, making energy supplies go further while lowering energy costs for business and families. Nearly every energy-saving and energy-producing technology depends on innovations in chemistry. An example of this innovation is the new thermochemical conversion process developed by Celanese, called TCX[®] technology, which uses basic hydrocarbons, like natural gas, as feedstocks to produce high-quality, low-cost ethanol for liquid transportation fuel.

Celanese is providing comments to the most recent RFS white paper to raise concerns over the RFS. The most recent topic, energy policy, focuses on the RFS and its impact on improving the energy security of the U.S. “Energy security” can cover a number of topics and issues – whether we have adequate energy supplies to address our domestic needs, whether we produce enough domestically to have sufficient control over those energy supplies or whether we have enough diversity in our energy portfolio to account for disruptions resulting from international and domestic supply problems. The RFS was passed and amended, in part, to wean the U.S. off of foreign petroleum. However, under the current framework of the program, we forgo some of the potential energy security by relying almost entirely on crop-based fuels. The most recent white paper released by the E&C Committee touches on this point when it asks the question:

“Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded? If so, how? If not, why not?”

Celanese believes that the RFS should be modified to enable domestically produced natural gas based ethanol to participate in the RFS. Modifying the eligibility requirements of the RFS poses numerous benefits including mitigating the cost impacts of the RFS on agricultural feedstocks, addressing some of the environmental concerns associated with farming, allowing for more broad geographic participation in the program (beyond traditional farming states) and promoting U.S. manufacturing. Already, bi-partisan legislation has been introduced by Reps. Olson (R-TX) and Costa (D-CA) in the form of the *Domestic Alternative Fuels Act* that would affect this

change. This legislation would enable new technologies and feedstocks to participate in the program by opening the mandate to allow increased competition.

An overview of Celanese's TCX[®] technology and potential benefits

Celanese's TCX[®] technology creates a low-cost ethanol fuel option that uses abundant domestic natural gas rather than food crops like corn, soy or sugarcane. Our process has lower water consumption, is energy efficient, and helps meet the world's energy challenges. In addition, the process does not require government subsidies or tax benefits to be cost competitive; Celanese just needs access to the market which the current RFS denies.

While the conversion technology employed is different, the end-product fuel produced from TCX[®] technology is molecularly identical to corn-starch ethanol. TCX[®] technology enables efficient ethanol production from domestic rather than food crops. This new technology also broadens the potential participation in the RFS to states and regions that have not typically participated. To date, the majority of renewable fuel production has come from corn- and soy-producing states. While the program has benefited these states, others have been unable to participate, or, in some cases, been harmed by the program through increasing prices associated with corn and soy crops.

Modifying the program's eligibility would address concerns raised over transporting alternative fuels around the country to be blended into the finished product to be sold to consumers. These concerns are particularly true when trying to truck ethanol over the Rocky Mountains or out to the coasts, which typically produce less crop-based fuels. By allowing natural gas based ethanol to participate in the program, regions across the country could produce their own fuels based on locally available natural gas, removing the cost, safety and environmental concerns associated with transporting liquid fuels long distances, often by tanker trucks over our highways.

TCX[®] technology is but one example, global energy needs are driving investment from governments and companies to compete for the next game-changing advancement in this space. Science cannot and should not be dictated by public policy made in Washington, DC, and handcuffing the types of feedstocks and fuels that can be developed with artificial constraints limits scientific advances and puts the U.S. at a disadvantage. It is imperative that Congress let the market drive technological advancements.

The rigidity of the RFS also fails to account for changing global energy scenarios. A perfect example of this is the advancement of drilling technologies that has made domestic natural gas supplies more abundant than ever before. This new-found availability has transformed today's energy debate. Today's discussions focus on becoming truly energy dependent, being an energy exporter and the domestic development that is resulting from this new-found energy supply. Modifying the RFS to include natural gas would allow us to take advantage of these abundant resources while increasing U.S. manufacturing. Consumers would not see any difference in the performance of natural gas based ethanol with their crop-based counterparts.

Expansion of the RFS would benefit the U.S.

Celanese is a perfect example of a broader benefit to modifying the RFS; allowing natural gas based ethanol to participate creates a more competitive business environment that allows for free market efficiencies to develop the most efficient and effective solutions. Celanese never

intended to participate in the transportation fuel pool, but we are a company that continually looks for new ways to innovate using our core products. From that perspective, we were able to develop a process technology that has the potential to have a major impact on fuel grade ethanol economics, while advancing conversion technology.

Modifying the eligibility requirements of the RFS also mitigates some of the environmental issues associated with our crop-based approach to renewable fuels. While the RFS only measures a fuel's environmental impact according to its lifecycle greenhouse gas emissions, there are a number of other factors that should be considered – water usage, water pollution, erosion, energy efficiency as well as reduction in landfill mass and others – that can have a dramatic, local impact.

While there are numerous benefits to amending the RFS to allow natural gas based ethanol, there are just as many negative consequences to maintaining the program's current structure, many of which have been well documented. Already we have seen the very real impact that the RFS has had on corn, soy and their associated by-products. Not only has the use of these products in the transportation fuel space been mandated, but competition from alternative feedstocks is outright prohibited because of the inability of fuels produced from alternatives to generate Renewable Identification Numbers. This has very real implications on our energy security as well given the increasing percentage of crop-based fuels that are relied upon on an annual basis. By narrowly defining the feedstocks that can qualify for the RFS, we are much more susceptible to weather-related events that can disrupt agricultural output

Distorting the prices of fuel feedstocks does more than simply raise costs for other industries competing for these products. By distorting the marketplace, decisions are made that are not based on natural efficiencies or availability. Instead, costs are incorporated and assumed, reducing the ability for natural marketplace efficiencies to draw down costs. Marketplace efficiencies not only reduce costs, but can help reduce environmental impacts.

Conclusion

The RFS was created and amended with a number of goals in mind, including energy security. Energy security has been a hot topic in this country for decades as we have, for too long, relied upon foreign countries to supply our domestic energy needs. In order to truly address our energy security we must work to diversify our fuel sources beyond traditional sources. Similar efforts have been made in the electricity generating sector. In the electricity generation sector we know that we have to take an all of the above approach so that each region of the country can determine the most efficient way to generate power. Celanese believes that this thinking needs to be applied to the transportation fuel sector as well.

Celanese would like to thank the Committee for its continued focus on the RFS. We would welcome any thoughts or feedback on our comments or our TCX[®] technology.

Thank you for your consideration.

United States House of Representatives
Committee on Energy and Commerce
Chairman Fred Upton
2125 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Upton and the Committee on Energy and Commerce,

We wanted to reach out as small business owners to remind you, as you consider a path forward with the RFS, how interconnected we all are when it comes to US energy policy. We have watched margins ebb and flow and small businesses effected profoundly by high fuel and food prices and unintended consequences stemming from well intended but poorly written laws and standards.

It is of the utmost importance to the small business community that we develop a balanced, comprehensive domestic energy policy that reduces our dependence on foreign oil while lowering fuel prices, creating jobs and growing the U.S. alternative fuel industry. As it's currently written, the Renewable Fuel Standard works against that mission because it relies too heavily on one source for alternative fuel – corn – and nascent biofuel industries that haven't come close to meeting their potential. We in the business community believe a responsible solution would be to take advantage of new fuel technologies that can be activated and scaled right now, while also harnessing some of our most abundant natural resources.

A technology that has the ability to scale up quickly and relieve the pressure on corn is ethanol made from natural gas. With natural gas so abundant across the U.S., producing conventional ethanol out of this clean and inexpensive natural resource would bring robust new growth to the alternative fuel industry and stimulate local economies. It could also lower the cost of transportation fuel that blends ethanol. But as it's currently written, the RFS short-sightedly excludes natural gas from being used to make ethanol.

That's why we support legislation like the Domestic Alternative Fuels Act, a bipartisan bill that proposes expanding the RFS to include natural gas. With this simple,

reasonable revision to the RFS, job-seekers, the business community and local economies would reap enormous benefits.

We hope you will consider revisions like this in your review.

Sincerely,



Dale Steenbergen
President & CEO
Greater Cheyenne Chamber of Commerce



Jack Casanova
President
Louisiana Wholesalers Association



Mike Race
Owner
Race Realty (Coldwell Banker)



June 21, 2013

Comments from cLausten LLC

Submitted by email: rfs@mail.house.gov

Comments to Renewable Fuel Standard Energy Policy White Paper:

As Principal of cLausten LLC, I appreciate the thoughtful approach taken by the Energy and Commerce Committee to review the Renewable Fuel Standard. In response to the Energy and Commerce Committee's fourth White Paper regarding the overall policy of the Renewable Fuel Standard, the comments here below are limited to questions in which I have experience and insights.

1. How vulnerable is the United State currently to major oil supply and price disruptions? In the context of rising domestic oil production and falling demand, how important is it to adopt new and strengthen existing policy measures to further reduce our dependence on oil?

Despite the U.S. increasing its own oil and gas production, the market for fuel in the United States is still vulnerable to domestic and international oil restrictions or events, especially given that a number of U.S. refineries have closed down. Supporting the Renewable Fuel Standard will continue to help diversify the nations' energy supply, help create more domestic jobs and provide a cleaner environment. While the demand appears to be reducing for transportation fuel, there continues to be a demand for heating, commercial and industrial applications.

Gasoline price spikes in Minnesota in May of this year were according to the Energy Information Administration due to planned refinery outages. One can ascertain that is planned outages create significant increases in gasoline prices; the supply and demand chains are clearly very narrow. Gasoline and diesel fuel price increases are seen during major storms within the United States. Even if the demand is decreasing, alternative sources could help buffer fuel price fluctuations.

Tremendous advancements have been made in the biofuel industry; backing away now would be an unfortunate setback for this industry. Several new facilities and biofuel pathways are awaiting EPA approval and are ready to produce advanced biofuels.

2. How has the RFS contributed to improved energy security?

Given that the international market for petroleum based fuels is very tight and there is an ever increasing demand at the international level, every option for providing energy security should be supported, "all of the above". Developing new resources provides for a more secure, cleaner and economically stronger country.

3. In the context of rising domestic oil production and falling demand, to what extent does the RFS currently contribute to U.S. energy security and to what extent will it further contrite going forward?

The petroleum markets are international and not just domestic. In light of the more than increasing demand in the rest of the world compared to the falling demand for oil in the U.S., supporting the RFS will allow potentially greater exports of oil and thereby could help to reduce the U.S. trade deficit. Reducing the trade deficit creates a stronger U.S. economy and more secure country that is not dependent on unfriendly nations for oil.

5. What has been the impact of the RFS on oil prices? What has been the impact on gasoline and diesel fuel prices? What has been the impact on oil and fuel price volatility? How will these impacts change in the years ahead?

The prices of biofuels track closely to the price of oil and biofuels have if anything helped to keep gasoline and diesel prices lower due to diversification. Given that the oil markets are primarily driven by international demand and not just domestic, if anything biofuels may help ease costs in the U.S. instead of increasing costs.

6. Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded? If so how? If not, why not?

The RFS could be modified to enhance energy security by:

- i. Providing biofuel producers more regulatory certainty and timely responses on petitions;
- ii. Expanding the definition of biofuels that qualify as heating oil such that all biofuels approved by EPA may be used for space heating and not just biodiesel or perfect “hydrocarbon” fuels meeting Heating oil #1 or #2.
- iii. Expanding the qualified uses of biofuels such that the approved biofuels may be used in process heating or in commercial and industrial applications and not have the RINs from the biofuel retired due to an invalid use of the biofuel. If biofuels are displacing petroleum products, the RINs should remain valid. The manufacturing sector is struggling to meet new EPA emissions requirements and not all manufacturing centers have access to natural gas. Most biofuels reduce emissions to at or below the EPA emission requirements yet the biofuels would NOT be able to generate RINs or the RINs would have to be retired if used in non valid applications, that is if the renewable fuel volume associated with the RIN in a application other than for use as transportation fuel, jet fuel or heating oil. Allowing biofuels to be used in the commercial and industrial sector will expand the use of biofuels, reduce emissions and help maintain manufacturing jobs in the U.S.
- iv. The range of feedstocks permissible in the RFS should be expanded. For example, the type of materials from MSW that may be used in biofuels is limited. The RFS should allow more of the waste streams to be included, such as difficult to recycle plastics or used tires. Landfills are a major contributor to greenhouse gas emissions. Capturing the energy from landfills, other than capturing methane, and converting it to a biofuel, can help reduce not only methane emissions from landfills, but greenhouse gas emissions from newly drilled or captured fossil fuels. Further, reducing the amount of waste in landfills helps the overall environment.

v. The biomass base diesel definition does not allow co-processing. If the U.S. is serious about reducing GHG and expanding the development of drop in fuels, co-processing should be allowed to be used and the biofuel produced considered an "Advanced Biofuel" as per the RFS if the fuel meets the environmental requirements. Allowing co-processing is efficient because much of the infrastructure already exists.

Thank you again for the opportunity to provide input to the review of the Renewable Fuel Standard.

Respectfully submitted,

Connie Lausten, PE

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Renewable Fuels Standard Assessment White Paper The Committee on Energy and Commerce

CountryMark is Indiana's only American-owned oil exploration, production, refining and marketing company and is recognized as a leader in the distribution of biodiesel and ethanol. The CountryMark refinery uses 100% American crude oil sourced from the Illinois Basin located in Illinois, southwest Indiana, and western Kentucky. Our refinery processes 28,000 barrels of crude per day which represents only 0.15% of the entire domestic refining industry. Even though CountryMark is small from a refining industry perspective, we have a large impact on the State of Indiana. CountryMark supplies over 75% of the agricultural market fuels and 50% of school district fuels in the state.

CountryMark is owned and controlled by its member cooperatives that are in turn owned and controlled by individual farmers within our trade territory. Over 100,000 farmers in Indiana, Michigan, and Ohio participate in these local cooperatives who own CountryMark. CountryMark's Board of Directors is comprised of farmers. Each year, profits are distributed back to these farmers via the cooperative system. These distributions remain in rural communities where the dollars support local economies.

CountryMark appreciates the opportunity to comment on the Renewable Fuels Standard (RFS) Assessment White Paper #4: *Energy Policy Influences of Renewable Fuel Standard* and provide valuable information as the Committee on Energy and Commerce deliberates changes to the RFS.

On the following pages you will find input on many of the questions that were posed in the RFS Assessment White Paper. For continuity, the question numbers are consistent with those in the solicitation. CountryMark has decided to only address questions that are related to our business.

- 1. How vulnerable is the United States currently to major oil supply and price disruptions? In the context of rising domestic oil production and falling demand, how important is it to adopt new and strengthen existing policy measures to further reduce our dependence on oil?*

The United States is less vulnerable today than five to ten years ago due to the increase in domestic oil production, not implementation of RFS. As oil production has grown through advances in hydraulic fracturing technology, the United States has been able to reduce the amount of imported foreign oil.

At the same time as increasing domestic production, demand for finished products has been decreasing since the recession in 2009. EIA data shows that total oil products consumed are decreasing and equivalent to the late 1990's levels. This decrease in oil product consumption is a result of more energy efficient vehicles, reverse urban sprawl, higher unemployment, and an increase in energy efficiency awareness and price conscious consumers.

The largest price disruption experienced in the past five years coincided with the dollar being devalued in 2008 (Figure 1). As the dollar weakened, the price of crude oil climbed to a record high \$147 per barrel in the summer of 2008.



Figure 1: Value of the US Dollar

Sudden increases in oil prices, as experienced in 2008, put a significant amount of pressure of small business refiners. While the price of fuel products increases, the cost of crude oil increases faster than the fuel price product prices. During times like this, small business refiners generally operate slightly negative to slightly positive cash margin; but do not enjoy record profits as perceived by many consumers. Operation in this mode is economically unsustainable to a small business refiner.

CountryMark processes 100% American crude oil into products that are purchased and used by our farmer owners. Our mission is to ensure supply so planting and harvest are not interrupted. Farming technology is based on quality diesel fuel – alternatives are not economically viable for this industry sector. The RFS has mandated CountryMark to change our fuel slate to accommodate renewable fuels or buy expensive credits to maintain compliance. This could actually make our customer-owners more vulnerable to supply disruptions.

2. How has the RFS contributed to improved energy security? To what degree should the reduction in U.S. oil imports be attributed to the RFS?

The RFS has not contributed to improved energy security in the United States. The RFS program is selecting winners and losers in the fuels industry and not permitting market forces to develop the best solution for the consumer. Manipulating the free market by selecting which companies or industries can compete and supply the United States energy inhibits the ability to develop economically sustainable energy sources. Most of the programs supported by RFS are not economically viable without government mandates or support. Without this government support, renewable fuel companies shut down. This is not an economically viable business model that will succeed long term. This increases our risk of energy supply, not our energy independence.

Substituting ethanol into the gasoline pool has not significantly reduced greenhouse gas emissions or reduced dependence on other countries for energy sources. The production of ethanol requires almost as much energy as is contained in the finished fuel. There is not a significant gain in energy available after planting, fertilizing, harvesting, fermenting, separation, and transportation of ethanol is accounted for throughout the entire process.

Cellulosic ethanol production does not exist in the United States on a commercial scale. Furthermore, the RFS has an advanced biofuel requirement that can only be met by either biodiesel or Brazilian ethanol. This in combination with California's low carbon law requirements drives imports from Brazil to the United States. Even though the molecule and properties are the same, Brazilian ethanol gets favored status because it is made from sugar cane instead of corn. Not only is ethanol an inefficient fuel as discussed previously, policy decisions are making the United States less energy secure, not more secure, by requiring imports to meet regulatory compliance.

The reduction in US oil imports cannot be directly attributed to implementation of RFS. At the same time period that ethanol production was ramping production, domestic oil production was also increasing production. Table 1 summarizes oil imports and domestic production from EIA. In 2012 the United States produced 1.4 million barrels of oil more than 2007, and correspondingly imported 1.3 million fewer barrels of oil.

	2007	2012	Delta
US Oil Production	5.2	6.6	1.4 million bpd
US Oil Imports	3.3	2.0	(1.3) million bpd

Table 1: US Oil Import and Production Data

Specific to CountryMark, the RFS has reduced our energy security. CountryMark is a fully integrated, 100% American owned oil company. All of our oil is produced from the Illinois Basin and transported through a company owned piping system to our refinery in southwest Indiana. All of our products are distributed throughout the state through our privately held pipeline and terminal network to deliver high quality fuels to our American market.

RFS implementation required CountryMark to begin buying fuel blend components that are outside of our self-contained system, where we have little control over the process or logistics. RFS requires us to purchase and blend specified amounts of fuel blend components with our products to achieve government determined mandates. If biofuels blending was not required, CountryMark could determine the appropriate amount of blending and maintain control of our operation.

CountryMark's mission is to ensure supply to our customer owners regardless of large supply disruptions. For example prior to the RFS, when Hurricane Katrina devastated New Orleans and the gulf coast oil infrastructure, CountryMark was able to supply our customers through our self-contained, controlled system. With RFS compliance in place, CountryMark now must rely on outside suppliers of biofuels to be able to meet this commitment. This in turn has made our customers more vulnerable to supply disruptions.

CountryMark is not interested in owning and operating an ethanol plant to achieve this control. Technology is outside of our core competencies of oil production, refining, and logistics. We also do not have the required competencies in sourcing feed stocks in the commodity markets to supply this type of investment. A business venture like this is too high of a risk and a distraction to our mission of delivering hydrocarbon based fuels to our customers.

3. *In the context of rising domestic oil production and falling demand, to what extent does the RFS currently contribute to U.S. energy security and to what extent will it further contribute going forward?*

RFS is not contributing to energy security. RFS should be repealed and the free market should determine how much biofuels are blended into the gasoline and diesel products. The following is a list of reasons that RFS is compromising the United States energy security.

- a. Companies with large compliance costs find exporting finished products to be more cost effective than purchasing RINs or paying fines for non-compliance. The cost of compliance is a direct offset to the price that a domestic fuels company requires to incentivize them to ship finished products overseas. Under RFS, exported fuel is not counted in the total fuel production used to calculate a refiner's renewable fuels obligation. For example, ethanol renewable identification number (RIN) credits have recently cost \$1.00 per gallon. When using ten percent in gasoline, this equates to a compliance cost of \$0.10 per gallon of finished gasoline. If the US whole sale market is \$3.00 while an international market is \$2.95 (including shipping costs), the fuel will be shipped overseas. Taking into account the \$0.10 per gallon cost of compliance, the net return in the US market is (\$3.00 minus \$0.10) \$2.90 per gallon. By shipping the product overseas, the refiner can reduce its compliance obligation and increase profitability. The result is significantly less liquid fuels in the American market which reduces our energy security. This also results in higher fuels prices as an effect of supply and demand.
- b. As mentioned previously, RFS is selecting winners and losers in the fuels markets by manipulating the fuels market. Most of the biofuels companies cannot survive without government support either directly through tax incentives or indirectly through requiring their product to be purchased. This is not a sustainable business model, which increases risk to American's future energy supply.
- c. When RFS was originally rolled out, the volume of gasoline consumption was expected to increase over time. Several years after implementation, we find gasoline consumption is decreasing. Continuing to increase biofuels blending requirements will result in imbalances in the fuels market as a result of RFS. At best, this imbalance will result in exported fuels. At worst, this imbalance will result in facilities shutting down which further reduces energy security. Impacts of the Blend Wall were a part of the discussion in the first White Paper.
- d. Specifically related to CountryMark, our company is owned by the farmers that count on us to supply them high quality diesel fuel for their farm equipment. Continuing to expand RFS could threaten the viability of this small oil company. When CountryMark is no longer able to provide fuels or residual income to our farmer owners, they are then subject to market conditions such as supply constraints. This exposure could also increase Americans' food source risk if farmers are not able to maintain their competitive positions through strategic fuel channels.

From the preceding discussion, the increased risk of continuing the RFS program without changes is apparent. CountryMark believes that biofuels will continue to be blended with fossil fuels because some customers still demand the blend and because biofuels have value. We believe that the structure of RFS requiring mandates should be eliminated and the fuels

producers should be able to compete in a free market environment. This structure improves our energy security and reduces unnecessary risks created by RFS.

4. *How do the costs and benefits of the RFS compare to those of other federal policies to diversify fuels used in the transportation sector, diversify transportation options, and reduce oil dependence through other means?*

The RFS is similar to many other government alternative energy programs. Without government support, the product or company could not survive long term. Alternative fuels programs are not cost competitive with proven fuel technologies such as fossil or nuclear fuel systems.

More than 50 companies that have received greater than \$16 billion from the taxpayer funding such as Solindra (solar), StatCon Technologies (solar), A123 (auto manufacturing), Fisker Automotive (auto manufacturing), Nordic Windpower (wind energy), and Compact Power Inc (battery manufacturing), just to name a few, that no longer contribute to society due to bankruptcy. When the government gets involved in selecting winners and losers in the market, the long term results are often unfavorable.

Benefits derived from RFS implementation do not exceed the costs of the program. When all costs are accounted for with the program, considering financial burden of fossil fuels producers and the net environmental effect of biofuels programs (discussed at length in the third RFS white paper), the program results in slightly negative aggregated results. The RFS increases compliance and operating costs for small business refiners like CountryMark which in turn threatens the economic viability especially in a world of increasing mandates. Some refiners could be driven out of business due to mandated compliance costs which reduces energy security.

6. *Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded? If so, how? If not, why not?*

Repealing RFS will enhance energy security. Permit the free markets to determine the appropriate volume of biofuels to blend with fossil fuels. If the American consumer wants biofuels, they will vote with their dollar and their voices to the fuels providers. Under today's system, the consumer has little or no opportunity to contribute to the fuels blending debate because of government mandates. Today many Americans own flex fuel vehicles but do not exercise their fuel switching choices because of the inconvenience of refueling more often. Ethanol has less energy per gallon than gasoline, reducing achievable distance of the consumer. To the average American, the extra time needed to fuel their vehicle is not worth switching fuels.

Thank you for your consideration of these comments. As Congress moves to address the Renewable Fuels Standard and the significant challenges that it presents in the current transportation fuels market, CountryMark will be an enthusiastic and valuable participant in your deliberations.

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Domestic Fuel Solutions Group

On behalf of the Domestic Fuel Solutions Group (DFSG), we thank the House Energy & Commerce (E&C) Committee for its continued review of the Renewable Fuel Standard (RFS). The RFS is the backbone of the federal government's policy for developing alternative transportation fuel options for the country as part of its approach to reducing our reliance on foreign petroleum, decreasing environmental impacts of green house gasses and improving the country's overall energy security.

I. Introduction

The DFSG is a growing coalition of fuel industry stakeholders who share the common goal of reducing America's dependence on foreign oil and advancing a broad range of alternative fuels. We believe that doing so has profound economic, environmental and public benefits. The 54 members of the DFSG hail from eight states, from West Virginia to Louisiana to California to Alaska, and represent a broad spectrum of industries including natural gas, oil, agriculture, dairy, livestock, trucking, restaurant, food distribution, environment, labor and business. The objectives of the DFSG are to identify pragmatic solutions to challenges facing the U.S. energy market and the industries that depend on it, promote new strategies and technologies, and marshal the broad-based support necessary to strengthen domestic fuels policy.

To that end, we appreciate the House E&C Committee's most recent white paper on the RFS which focuses on energy policy and security. The DFSG believes that the issues raised in this most recent paper demonstrate the very real need to amend the RFS to fix the shortcomings in the program, account for new developments in the energy space and expand the eligibility requirements of transportation fuels able to participate in this program. It is important to consider improvements to a law that was last revised in 2007 and does not address the significant scientific and technological advances that have occurred since then. Already, we have seen legislation introduced that would make any number of changes to the program. The DFSG has endorsed the *Domestic Alternative Fuels Act*, introduced by Rep. Pete Olson (R-TX) , Rep. Jim Costa (D-CA), Rep. Ted Poe (R-TX), Rep. Henry Cuellar (D-TX), Rep. Eric "Rick" Crawford (R-AR), Rep. Ralph Hall (R-TX), Rep. Tom Cole (R-OK), Rep. Gene Green (D-TX), Rep. Blake Farenthold (R-TX), Rep. Tim Griffin (R-AR), Rep. Bill Flores (R-TX), Rep. Joe Barton (R-TX), Rep. Kurt Schrader (D-OR), Rep. Filemon Vela (D-TX), Rep. Peter Welch (D-VT), Rep.

Randy Neugebauer (R-TX) and Rep. Thomas Marino (R-PA).. This bi-partisan legislation would allow for fuels produced from a sources other than corn to participate within the conventional biofuel portion of the RFS. This proposal is recieving strong national support including the legislatures of two states, Louisiana and West Virginia, that have passed resolutions supporting this bill.

II. Current State of the RFS

The RFS is the primary program to establish a marketplace for eligible alternative fuels to develop and be integrated into the broader transportation sector. However, because of the magnitude of the program, the inverse is also true – fuels and technologies **not** meeting the eligibility requirements of the RFS are **not** granted access to the alternative fuels marketplace and are **not** integrated into the transportation fuel pool. This type of policy stifles innovation, results in inefficient resource allocation and, ultimately, fails to maximize our efforts to truly become energy independent and reap the economic benefits of securing our own domestically produced fuels. The RFS, through strict eligibility requirements, is the very definition of federal policy selecting winners and losers based on special interest policy constraints.

What makes this approach dangerous is that it enables politics to dictate progress rather than science and innovation. It calls for a very specific solution to a complex problem and fails to consider options that could potentially address our fuel needs in a more efficient and beneficial manner. When the RFS was passed in 2005 and later expanded in 2007, the predominant alternative fuel technology was corn-based ethanol. Lawmakers were interested in promoting on-the-horizon technologies such as cellulosic and eventually algae-based fuels; however, they were not yet at the commercial or even pilot production stages. DFSG does not oppose these fuels; however, the coalition believes that the approach taken by the RFS fails to consider how technological discoveries could create additional options. By narrowly defining the starting point (feedstocks) and end point (fuels), the law is telling science it must connect those specific points – regardless of which direction science might naturally lead us.

“The United States needs a balanced and sensible domestic energy policy. In this era of global instability and economic uncertainty, we need to focus on building a broad and comprehensive energy policy that includes new technologies and harnesses existing natural resources.”

-Steve Kominar, Mingo County Redevelopment Authority, DFSG Member

Narrowly defining the feedstocks that must be used also distorts market prices. The impacts of the RFS on the food and feed industries have been well documented. Due in large part to RFS mandates, nearly 40% of the U.S.’s corn crop in 2011-12 will be converted to ethanol and blended with the gasoline that powers our cars¹. Since 95% of ethanol is made from corn, the

¹ “World Agricultural Supply and Demand Estimates,” USDA, 6/12

price of one often affects the other^{2,3}. Studies show that the rise in RFS-mandated ethanol production has contributed to corn prices nearly doubling since 2007 and tripling in the last decade^{4,5}. High corn prices often translate to higher feed costs at the barnyard and higher food prices for consumers. This has been adversely affecting agricultural interests across the nation, from California dairies to livestock ranches in Wyoming to poultry farmers in Arkansas.

“Oregon dairy farmers are being crushed financially by the unintended consequences created by making ethanol from corn,”

- Jim Krahn, Executive Director, Oregon Dairy Farmers Association, DFSG Member

“Reducing the amount of corn going into the production of ethanol will stabilize the price of corn and allow the feedlots to reduce their feed costs. Demand for our calves will increase along with price.”

- Dave Foster, CEO, Cattle Producers of Louisiana, DFSG Member

In addition, relying almost entirely on crop-based fuels makes a significant portion of our alternative fuel supply subject to weather-related problems such as flooding or droughts. In cases where weather (or other factors) impact crop yields, the impact on food and feed prices are exacerbated as we saw with numerous states calling on the EPA to waive some or all of the RFS as a result of the national drought last summer.

“Bringing even more urgency to the issue is the devastating effect this summer’s record drought has had on the corn crop which has driven up corn and food prices and brought tremendous hardship to the oil and gas industry here in Louisiana.”

-Don G. Briggs, Louisiana Oil and Gas Association, DFSG Member

Narrowly defining the feedstocks that must be used also excludes a significant portion of the country from participating in securing its own energy future. Relying almost entirely on crop-based fuels substantially benefits agricultural states while telling those without significant farming operations, like many of our member states, to sit on the side line. Energy is traditionally a regional issue rather than a partisan one. That is because different regions have different assets and challenges that dictate how they approach energy solutions. But it is this diversity that has enabled the development and deployment of geothermal energy in the southwest and hydroelectric energy in the northwest, biomass development in the southeast and wind energy across our plains and even offshore. The recognition of this diversity has led to the diversity in technology. Would we have access today to these and other technologies if the federal

² “Ethanol Rises To Three-Month High On Corn Costs,” Bloomberg, 7/2/12

³ “Iowa Ag Review,” Center for Agricultural and Rural Development, Spring 2007

⁴ AgMRC Renewable Energy Newsletter, 8/09

⁵ USDA National Agricultural Statistical Service

government had mandated all states to use solar energy? Would we have seen the dramatic advancements in their individual efficiencies and capabilities?

It is also important to note how dynamics in the energy space have changed since the last time the RFS was amended. The explosion of accessible domestic natural gas reserves changed our overall energy outlook, while opening up new technological possibilities of how we can fully utilize this newfound supply. This development will have a profound impact on our energy policy generally, and that includes our transportation fuels policy.

“Expanding the conventional biofuels portion of the RFS to include natural gas and other domestic resources imparts many benefits both nationally and locally. It ramps up a new alternative fuel industry, creating thousands of jobs and injecting billions of dollars into local economies.”

- Charlie Burd, Exec. Dir., West Virginia Independent Oil & Gas Association, DFSG Member

"Tapping local natural gas would reduce our fuel costs from \$5 to \$2 a gallon. As savings go, that would be a game-changer for Native Alaskans."

- Bob Loescher, Legislative Director, Alaska Native Brotherhood Grand Camp, DFSG Member

From an environmental perspective, the DFSG also believes in taking a wide-ranging view of the benefits and impact of alternative fuels on the environment. In particular, the DFSG recommends using fuels that reduce water consumption, decrease erosion and eutrophication, conserve arable land and increase energy efficiency, as well as reduce greenhouse gas emissions. We are committed to considering all environmental factors when taking on the country's energy challenges, and we believe no single factor should be determinative.

The DFSG and its members support the underlying energy security goals of the RFS; however, we believe that the current framework of the program fails to set us on a path to achieve that goal. Recognizing that we were too reliant on foreign petroleum, the RFS sought to create a market for alternative solutions. Looking at the program as it is currently structured the primary source of our biofuels comes from conventional biofuels, which are defined as ethanol produced from corn starch. Narrowly defining what alternative fuels are acceptable is the exact opposite of the policy that the RFS proclaimed to encourage.

III. A Sensible Path Forward

A top priority of the DFSG is to encourage a thorough review of the Renewable Fuel Standard (RFS) in light of new developments in the domestic alternative fuels landscape. The RFS needs to account for a full diversity of fuel technologies and to foster, rather than inhibit, a fair and competitive alternative fuels marketplace.

Because of this, the DFSG and its members are proud to endorse the *Domestic Alternative Fuels Act*. This commonsense approach would grant access to the conventional biofuel portion of the

RFS for fuels produced from domestically-sourced natural gas. This solution recognizes the recent developments in the natural gas space and the impact it has had on our supplies, allows for competition against the most developed of our biofuel options (corn ethanol) while preserving the framework of the advanced biofuel portion of the RFS so that those technologies continue to have consistency and support as they develop under the policy. The *Domestic Alternative Fuels Act* is already receiving broad, bi-partisan support from congressmen across the political spectrum and from all across the country – mirroring the diversity of the DFSG membership. “We’re not looking to take corn out of ethanol or replace the advanced biofuels program,” said Seth Jacobson, Executive Director and member of the DFSG. “We’re all for having a full diversity of sustainable, low cost and environmentally friendly resources available to make alternative fuel. Allowing natural gas into the RFS is a reasonable solution that aligns perfectly with the ‘all of the above’ approach while reducing our dependence on foreign oil. That’s why we’re supporting the *Domestic Alternative Fuels Act*.”

This approach also opens up the RFS to increased economic benefits. Allowing more participants – both from a technology and regional perspective – will drive more investment into new technologies, more construction into pilot- and commercial-scale production facilities and increase “buy-in” from more regions and citizens who will feel these benefits. There is also an added benefit to decreasing some of the negative consequences of the program, like price distortions of crop-based products.

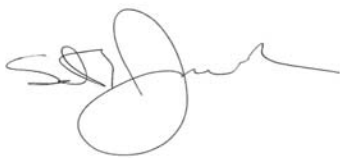
We believe in the well-intended goals of the RFS. We believe that the potential of the program can strengthen our nation’s energy security; however, we believe that changes must be made to address the issues experienced under the current program.

“Only with a true ‘all of the above’ approach will we grow our fuel economy and gain greater energy independence. I urge Congress to strongly consider a sensible reform of the RFS and help our state, community and local businesses benefit from a balanced energy policy.”

- Rob Casto, Executive Director, American Council of Engineering Companies of West Virginia,
DFSG Member

The DFSG and its members stand ready to assist the Committee as it continues this important undertaking through further explanation of our views or providing additional information. Thank you again for your dedicated work to improving the country’s overall energy future.

Sincerely,



Seth Jacobson
Executive Director
Domestic Fuel Solutions Group